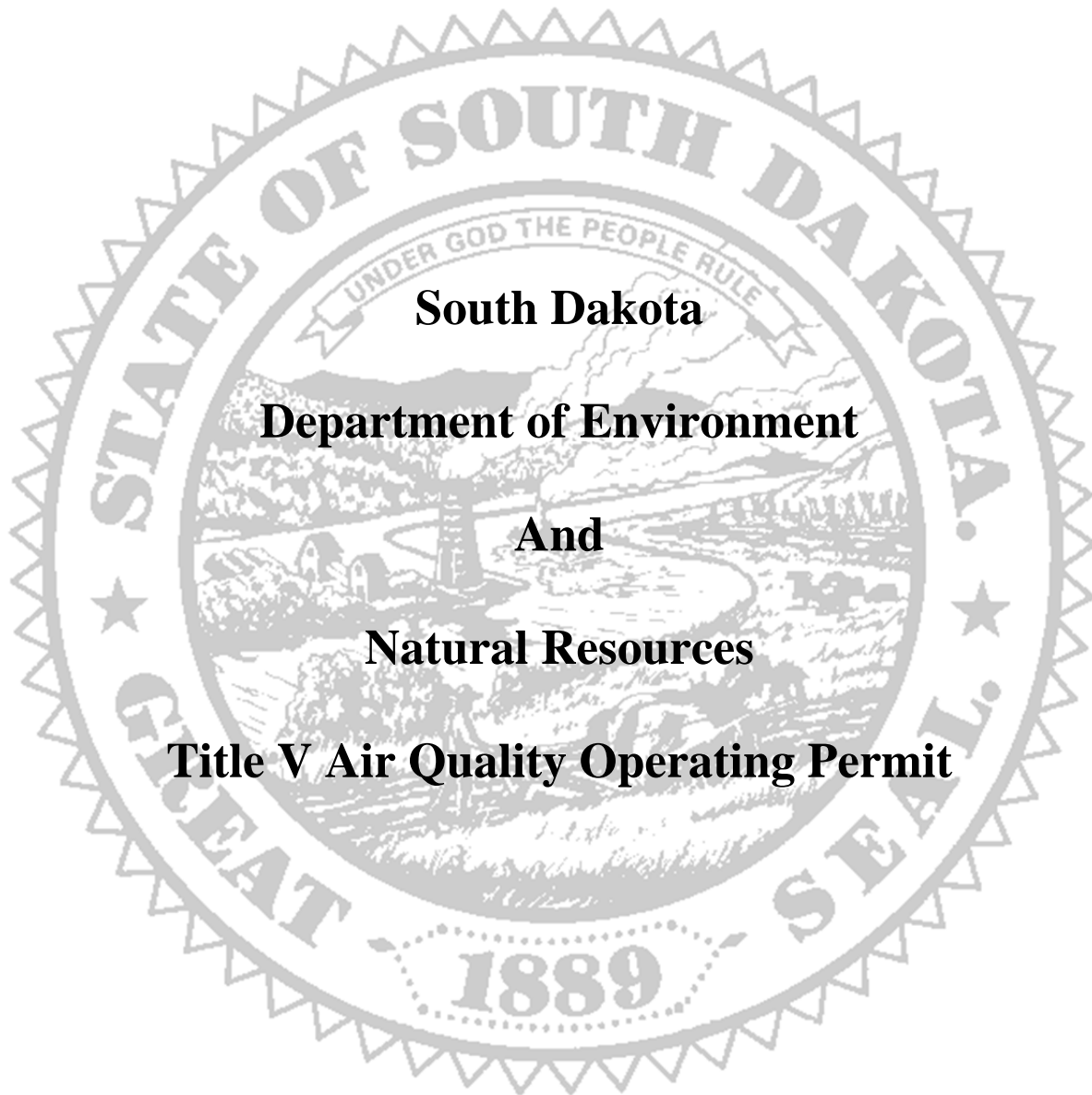


Permit #: 28.9901-06  
Effective Date: June 21, 2019  
Expiration Date: June 21, 2024



**South Dakota**  
**Department of Environment**  
**And**  
**Natural Resources**  
**Title V Air Quality Operating Permit**

A handwritten signature in black ink, appearing to read "S. M. Pirner".

**Steven M Pirner, P.E., Secretary**  
**Department of Environment and Natural Resources**

**Under the  
South Dakota Air Pollution Control Program**

Pursuant to Chapter 34A-1-21 of the South Dakota Codified Laws and the Air Pollution Control Regulations of the State of South Dakota and in reliance on statements made by the owner designated below, a permit to operate is hereby issued by the Secretary of the Department of Environment and Natural Resources. This permit authorizes such owner to operate the unit(s) listed in Table #1 under the listed conditions.

**A. Owner**

**1. Company Name and Mailing Address**

3M Company  
601 22<sup>nd</sup> Avenue South  
Brookings, South Dakota 57006

**2. Actual Source Location if Different from Above**

601 22<sup>nd</sup> Avenue South  
Brookings, South Dakota 57006

**3. Permit Contact**

Jill Blissenbach, Senior Environmental Scientist  
(651) 737-6528

**4. Facility Contact**

Paul L. Peterson, EHS Engineer  
(605) 696-1445

**5. Responsible Official**

Dale Tidemann, Plant Manager  
(605) 696-1239

**B. Permit Revisions**

Not applicable

**C. Type of Operation**

3M Company manufactures medical and surgical products.

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## 1.0 Standard Conditions

### 1.1 Operation of source

In accordance with Administrative Rules of South Dakota (ARSD) 74:36:05:16.01(8), the owner or operator shall operate the units, controls, and processes as described in Table 1-1 in accordance with the statements, representations, and supporting data contained in the complete permit application received March 11, 2016, January 18, 2018 and June 7, 2018, unless modified by the conditions of this permit. Except as otherwise provided herein, the control equipment shall be operated at all times in accordance with the manufacturer's specification and in a manner that achieves compliance with the conditions of this permit. The application consists of the application forms, supporting data, and supplementary correspondence. If the owner or operator becomes aware it failed to submit any relevant facts in a permit application or submitted incorrect information in an application, such information shall be promptly submitted.

*Table 1-1 – Description of Permitted Units, Operations, and Processes*

Unit	Description	Maximum Operating Rate	Control Device
#3	Boiler #3 – 1979 Trane Murray steam boiler. The boiler itself does not have any fuel fired burners. Heat is provided by the exhaust gases from the regenerative thermal oxidizer.	Not applicable	Not applicable
#4a	M1 coating line – 1975 custom built coating line with two coating stations operated in parallel. The two coating stations will not operate simultaneously.	Web throughput of 127 square meters per minute	Regenerative thermal oxidizer (Unit #4f)
#4b	M2 coating line – 1975 custom built coating line with two coating stations operated in parallel. The two coating stations will not operate simultaneously.	Web throughput is 187 square meters per minute	
#4c	M3 coating line – 1975 custom built coating line with two coating stations operated in parallel. The two coating stations will not operate simultaneously.	Web throughput is 330 square meters per minute	
#4d	M4 coating line and drum enclosure – 1994 custom built coating line and drum enclosure	Web throughput is 198 square meters per minute	
#4e	M6 coating line – 2006 custom built coating line	Web throughput is 198 square meters per minute	
#4f	2004 regenerative thermal oxidizer. The regenerative thermal oxidizer is fired by the exhaust gases from the coating lines and natural gas. The exhaust gases from the regenerative thermal oxidizer may be routed to Boiler #3 or its own stack.	Burner #1 – 32 million Btus per hour heat input	Not applicable
#7	Mixing room consisting of various drums,	Not applicable	Not applicable

<b>Unit</b>	<b>Description</b>	<b>Maximum Operating Rate</b>	<b>Control Device</b>
	totes, and mixers used to mix or blend solvents and adhesives before being applied by the coaters.		
<b>#8</b>	Die cleaning room used to clean parts with solvents	Not applicable	Not applicable
<b>#9a</b>	1990 Una-Dyn silo used to store polyethylene and polypropylene resin pellets	Storage capacity is 7,200 cubic feet and can be loaded at 2,800 pounds per hour	1990 Donaldson dust filter
<b>#9b</b>	1990 Una-Dyn silo used to store polyethylene and polypropylene resin pellets	Storage capacity is 7,200 cubic feet and can be loaded at 2,800 pounds per hour	1990 Donaldson dust filter
<b>#9c</b>	1990 Una-Dyn silo used to store polyethylene and polypropylene resin pellets	Storage capacity is 7,200 cubic feet and can be loaded at 2,800 pounds per hour	1990 Donaldson dust filter
<b>#9d</b>	1990 Una-Dyn silo used to store polyethylene and polypropylene resin pellets	Storage capacity is 7,200 cubic feet and can be loaded at 2,800 pounds per hour	1990 Donaldson dust filter
<b>#10a</b>	Transfer of polyethylene or polypropylene resin pellets from the silos to the extruder area	2,800 pounds per hour per silo	1990 Una-Dyn baghouse
<b>#10b</b>	Transfer of polyethylene or polypropylene resin pellets from the silos to the extruder area	2,800 pounds per hour per silo	1990 Una-Dyn baghouse
<b>#10c</b>	Transfer of polyethylene or polypropylene resin pellets from the silos to the extruder area	2,800 pounds per hour per silo	1990 Una-Dyn baghouse
<b>#11a</b>	Oven on the 4K maker line fired with natural gas	4.5 million Btus per hour heat input	Not applicable
<b>#11b</b>	Oven on the 4K maker line fired with natural gas	4.5 million Btus per hour heat input	Not applicable
<b>#13a</b>	Plate Sterilization – uses ethylene oxide to sterilize health care products	Not applicable	Anguil catalytic oxidizer
<b>#13b</b>	Laboratory Sterilization – uses ethylene oxide to sterilize health care products	Not applicable	Catalytic oxidizer
<b>#17</b>	24J extrusion process with hot melt coater – 2001 Davis Standard Corporation, model no.	1,905 tons of adhesive per year	Not applicable



<b>Unit</b>	<b>Description</b>	<b>Maximum Operating Rate</b>	<b>Control Device</b>
	D-TEX-58, extruder		
<b>#18</b>	22J solventless coater – 1993 Davis Standard Corporation, model #60IN60TPTH, coater, with a natural gas flame treater	2,100 pounds per hour of resin and 600 pounds per hour of adhesive. The flame treater has a maximum capacity of 0.18 million Btus per hour heat input.	Not applicable
<b>#19</b>	21J extrusion process – 1974 NRM, model Pacemaker III, extruder	1,995 pounds of resin pellets per hour	Not applicable
<b>#20</b>	4K maker line – 1971 custom built process for coating non-woven webs	Not applicable	Not applicable
<b>#21</b>	5K maker line – 1971 custom built process for coating non-woven webs	Not applicable	Not applicable
<b>#22</b>	6K maker line – 1971 custom built process for coating non-woven webs	Not applicable	Not applicable
<b>#24</b>	Three industrial cooling towers	Not applicable	Not applicable
<b>#25</b>	Diesel Engine #2 – 2007 Detroit Diesel Series 60 emergency engine, fueled with distillate oil	635 horsepower or 400 kilowatts	Not applicable
<b>#27</b>	Diesel Engine #1 – 1996 Ziegler/Caterpillar limited use diesel engine, model # 3406, fueled with distillate oil	587 horsepower or 400 kilowatts	Not applicable
<b>#28</b>	Boiler #4 – 2000 Johnston, model PFTA 1000-4 steam boiler, fired with natural gas. The boiler is equipped with low NO <sub>x</sub> burners.	40.331 million Btus per hour heat input	Not applicable
<b>#29</b>	Boiler #5 – 2000 Johnston, model PFTA 1000-4 steam boiler, fueled with natural gas. The boiler is equipped with low NO <sub>x</sub> burners.	40.331 million Btus per hour heat input	Not applicable
<b>#31</b>	Diesel Engine #3 – 2011 MTU Detroit, model #DS300D6S, nonemergency engine, fueled with diesel	343 kilowatts or 460 brake horsepower	Not applicable
<b>#32</b>	2012 Pillar Technologies corona treater located on the 21 J extrusion process	10 kilowatts	Not applicable
<b>#33</b>	2013 Pillar Technologies corona treater	10 kilowatts	Not applicable
<b>#34</b>	1970 Waukesha Motor Company emergency fire pump engine, fueled with natural gas	200 horsepower	Not applicable
<b>#35</b>	2017 Pillar Technologies M2 corona treater	10 kilowatt	Not applicable
<b>#36</b>	1973 ECG line water based coater	Not applicable	Not applicable

Unit	Description	Maximum Operating Rate	Control Device
#37	2007 Attest water based coater	Not applicable	Not applicable

### **1.2 Duty to comply**

In accordance with ARSD 74:36:05:16.01(12), the owner or operator shall comply with the conditions of this permit. An owner or operator who knowingly makes a false statement in any record or report or who falsifies, tampers with, or renders inaccurate, any monitoring device or method is in violation of this permit. A violation of any condition in this permit is grounds for enforcement, reopening this permit, permit termination, or denial of a permit renewal application. The owner or operator, in an enforcement action, cannot use the defense that it would have been necessary to cease or reduce the permitted activity to maintain compliance. The owner or operator shall provide any information requested by the Secretary to determine compliance or whether cause exists for reopening or terminating this permit.

### **1.3 Property rights or exclusive privileges**

In accordance with ARSD 74:36:05:16.01(12), the State's issuance of this permit, adoption of design criteria, and approval of plans and specifications does not convey any property rights of any sort, any exclusive privileges, any authorization to damage, injure or use any private property, any authority to invade personal rights, any authority to violate federal, state or local laws or regulations, or any taking, condemnation or use of eminent domain against any property owned by third parties. The State does not warrant the owner's or operator's compliance with this permit, design criteria, approved plans and specifications, and operation under this permit, will not cause damage, injury or use of private property, an invasion of personal rights, or violation of federal, state or local laws or regulations. The owner or operator is solely and severally liable for all damage, injury or use of private property, invasion of personal rights, infringement of federal, state or local laws and regulations, or taking or condemnation of property owned by third parties, which may result from actions taken under the permit.

### **1.4 Penalty for violating a permit condition**

In accordance with South Dakota Codified Laws (SDCL) 34A-1-39 and 34A-1-47, a violation of a permit condition may subject the owner or operator to civil or criminal prosecution, a state penalty of not more than \$10,000 per day per violation, injunctive action, administrative permit action, and other remedies as provided by law.

### **1.5 Inspection and entry**

In accordance with SDCL 34A-1-41, the owner or operator shall allow the Secretary, upon presentation of credentials, to:

1. Enter the premises where a regulated activity is located or where pertinent records are stored;
2. Have access to and copy any records required under this permit;
3. Inspect operations regulated under this permit; and/or
4. Sample or monitor any substances or parameters for the purpose of assuring compliance.

### **1.6 Severability**

In accordance with ARSD 74:36:05:16.01(11), any portion of this permit that is void or challenged shall not affect the validity of the remaining permit requirements.

### **1.7 Permit termination, modification, or revocation**

In accordance with ARSD 74:36:05:46, the Secretary may recommend the Board of Minerals and Environment terminate, modify, or revoke this permit for violations of SDCL 34A-1 or the federal Clean Air Act or for nonpayment of any outstanding fee or enforcement penalty.

### **1.8 Credible evidence**

In accordance with ARSD 74:36:13:07, credible evidence may be used for the purpose of establishing whether the owner or operator has violated or is in violation of this permit. Credible evidence may consist of the following:

1. Information from the use of the following methods is presumptively credible evidence of whether a violation has occurred:
  - a. A monitoring method approved pursuant to 40 CFR § 70.6(a)(3) and incorporated in this permit; or
  - b. Compliance methods specified in an applicable plan;
2. The following testing, monitoring, or information gathering methods are presumptively credible testing, monitoring, or information-gathering methods:
  - a. Any monitoring or testing methods approved in this permit, including those in 40 CFR Parts 51, 60, 61, and 75; or
  - b. Other testing, monitoring, or information-gathering methods that produce information comparable to that produced by any method in paragraph (1) or (2)(a).

## **2.0 Permit Fees**

### **2.1 Annual air fee required**

In accordance with ARSD 74:36:05:06.01, the owner or operator shall submit an annual administrative fee and an annual fee. The fee is based on actual emissions in accordance with ARSD 74:37.

### **2.2 Annual operational report**

In accordance with ARSD 74:37:01:06, the Secretary will supply the owner or operator with an annual operational report in January of each year. The owner or operator shall complete and submit the operational report to the Secretary by March 1 of each year. The responsible official shall sign the operational report in the presence of a notary public.

### **2.3 Annual air fee**

In accordance with ARSD 74:37:01:08, the Secretary will notify the owner or operator of the required annual air emission fee and administrative fee by June 1 of each year. The fees shall accrue on July 1 and are payable to the Department of Revenue by July 31 of each year.

## **3.0 Permit Amendments and Modifications**

### **3.1 Permit flexibility**

In accordance with ARSD 74:36:05:30, the owner or operator shall have the flexibility to make changes to the source during the term of this permit. The owner or operator shall provide the Secretary written notice at least seven days in advance of the proposed change (NOTE: The Secretary will forward a copy of the written notice to EPA). The written notice shall include a brief description of the change, the date on which the change is to occur, any change in emissions, the proposed changes to the permit, and whether the requested revisions are for an administrative permit amendment, minor permit amendment, or permit modification.

The Secretary will notify the owner or operator whether the change is an administrative permit amendment, a minor permit amendment, or a permit modification. A proposed change that is considered an administrative permit amendment or a minor permit amendment can be completed immediately after the Secretary receives the written notification. The owner or operator shall comply with both the applicable requirements governing the change and the proposed permit terms and conditions until the Secretary takes final action on the proposed change.

A proposed change that is considered a modification cannot be implemented until the Secretary takes final action on the proposed change or the owner or operator was issued an air quality construction permit. Permit modifications are subject to the same procedural requirements, including public comment, as the original permit issuance except that the required review shall cover only the proposed changes.

### **3.2 Administrative permit amendment**

In accordance with ARSD 74:36:05:33, the Secretary has 60 days from receipt of a written notice to verify the proposed change is an administrative permit amendment. As provided in ARSD 74:36:01:03, the Secretary considers a proposed change an administrative permit amendment if the proposed change accomplishes one of the following:

1. Corrects typographical errors;
2. Changes the name, address, or phone number of any person identified in this permit or provides a similar minor administrative change;
3. Requires more frequent monitoring or reporting;
4. The ownership or operational control changes and the Secretary determine no other change in this permit is necessary. However, the new owner shall submit a certification of applicant form and a written statement specifying the date for transfer of operating permit responsibility, coverage, and liability; or
5. Any other changes the Secretary and the administrator of EPA determines to be similar to those requirements in this condition.

### **3.3 Minor permit amendment**

In accordance with ARSD 74:36:05:38, the Secretary has 90 days from receipt of a written notice or 15 days after the end of EPA's 45-day review period, whichever is later, to take final action on a minor permit amendment. Final action consists of issuing or denying a minor permit amendment or determining the proposed change is a permit modification. As provided in ARSD

74:36:05:35, the Secretary considers a proposed change to be a minor permit amendment if the proposed change:

1. Does not violate any applicable requirements;
2. Does not involve significant changes to existing monitoring, reporting, or recordkeeping requirements;
3. Does not require or change a case-by-case determination of an emission limit or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis; or
4. Does not seek to establish or change a permit term or condition for which the source has assumed to avoid an applicable requirement, a federally enforceable emission cap, or an alternative emission limit. An alternative emission limit is approved pursuant to regulations promulgated under section 112(i)(5) of the federal Clean Air Act.

### **3.4 Permit modification**

In accordance with ARSD 74:36:05:39, an owner or operator may apply for a permit modification. A permit modification is defined in ARSD 74:36:01:10 as a physical change in or change in the operation of a source that results in at least one of the following:

1. An increase in the amount of an air pollutant emitted by the source or results in the emission of an air pollutant not previously emitted;
2. A significant change to existing monitoring, reporting, or recordkeeping requirements in the permit;
3. The change requires or changes a case-by-case determination of an emission limit or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis; or
4. The change seeks to establish or change a permit term or condition for which there is a corresponding underlying applicable requirement that the source has assumed to avoid an applicable requirement, a federally enforceable emissions cap assumed to avoid classification as a modification under a provision of the Title I of the Clean Air Act, or an alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Clean Air Act.

Permit modifications are subject to the same procedural requirements, including public comment, as the original permit issuance except the required review shall cover only the proposed changes.

### **3.5 Permit revision**

In accordance with ARSD 74:36:05:40, the Secretary may reopen and revise this permit to meet requirements of SDCL 34A-1 or the federal Clean Air Act. In accordance with ARSD 74:36:05:41, the Secretary shall notify the owner or operator at least 30 days before reopening this permit. The 30-day period may be less in the case of an emergency.

### **3.6 Testing new fuels or raw materials**

In accordance with ARSD 74:36:11:04, an owner or operator may request permission to test a new fuel or raw material to determine if it is compatible with existing equipment before

requesting a permit amendment or modification. A complete test proposal shall consist of the following:

1. A written proposal describing the new fuel or raw material, operating parameters, and parameters that will be monitored and any testing associated with air pollutant emissions during the test;
2. An estimate of the type and amount of regulated air pollutant emissions resulting from the proposed change; and
3. The proposed schedule for conducting the test. In most cases the owner or operator will be allowed to test for a maximum of one week. A request for a test period longer than one week will need additional justification. A test period shall not exceed 180 days.

The Secretary shall approve, conditionally approve, or deny in writing the test proposal within 45 days after receiving a complete proposal. Approval conditions may include changing the test schedule or pollutant sampling and analysis methods. Pollutant sampling and analysis methods may include, but are not limited to performance testing, visible emission evaluation, fuel analysis, dispersion modeling, and monitoring of raw material or fuel rates.

If the Secretary determines the proposed change will result in an increase in the emission of a regulated air pollutant or result in the emission of an additional regulated air pollutant, the Secretary shall give public notice of the proposed test for 30 days. The Secretary shall consider all comments received during the 30-day public comment period before making a final decision on the test.

The Secretary will not approve a test if the test would cause or contribute to a violation of a national ambient air quality standard.

## **4.0 Permit Renewal**

### **4.1 Permit effective**

In accordance with ARSD 74:36:05:07, this permit shall expire five years from date of issuance unless reopened or terminated for cause. The current permit shall not expire and shall remain in effect until the Secretary takes final action on the renewal application.

### **4.2 Permit renewal**

In accordance with ARSD 74:36:05:08, the owner or operator shall submit an application for a permit renewal at least 180 days before the date of permit expiration if the owner or operator wishes to continue to operate an activity regulated by this permit. The current permit shall not expire and shall remain in effect until the Secretary takes final action on the timely permit renewal application.

### **4.3 Permit expiration**

In accordance with ARSD 74:36:05:28, permit expiration terminates the owner's or operator's right to operate any unit covered by this permit.

## **5.0 Recordkeeping and Reporting**

### **5.1 Recordkeeping and reporting**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall maintain all monitoring data, records, reports, and pertinent information specified by this permit for five years from the date of sample, measurement, report, or application unless otherwise specified in this permit. The records shall be maintained on site for the first two years and may be maintained off site for the last three years. All records shall be made available to the Secretary for inspection. All notifications and reports shall be submitted to the Secretary using one of the following two notification methods:

#### Notification Method 1 – Mailing Address

South Dakota Department of Environment and Natural Resources  
PMB 2020, Air Quality Program  
523 E. Capitol, Joe Foss Building  
Pierre, SD 57501-3182

or

#### Notification Method 2 – Email Address

**AirQualityReporting@state.sd.us**

Each notification and report shall contain the information required in this permit, the signature of the responsible official or duly authorized representative as outlined in permit condition 5.2 and the certification statement in permit condition 5.3. If the owner or operator chooses to submit the notification and reports via email, the email shall contain an acrobat copy (PDF) of the notification or report. The acrobat copy shall contain the required information, signature, and certification statement. If a notification or report is required to be notarized, the notification or report may not be submitted by email.

### **5.2 Signatory requirements**

In accordance with ARSD 74:36:05:12 and 74:36:05:16.01, all applications, reports, or other information submitted to the Secretary shall be signed and certified by a responsible official or a duly authorized representative. A responsible official for a corporation is a responsible corporate officer and for a partnership or sole proprietorship is a general partner or the proprietor, respectively. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to the Secretary; and
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

The duly authorized representative shall be designated prior to or together with any reports or information to be signed by a duly authorized representative. The responsible official shall notify the Secretary if an authorization is no longer accurate.

### **5.3 Certification statement**

In accordance with ARSD 74:36:05:16.01(14)(a), all documents required by this permit, including application forms, reports, and compliance certification, shall be certified by a responsible official or a duly authorized representative. The certification shall include the following statement:

“I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document and all attachments are true, accurate, and complete.”

### **5.4 Monitoring log**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall maintain a monitoring log. The monitoring log shall contain the following information.

1. Maintenance schedule for each piece of control equipment listed in Table 1-1. At a minimum, the maintenance schedule shall meet the manufacturer’s recommended schedule for maintenance. The following information shall be recorded for maintenance:
  - a. Identify the unit;
  - b. The date and time maintenance was performed;
  - c. Description of the type of maintenance;
  - d. Reason for performing maintenance; and
  - e. Signature of person performing maintenance;
2. Identify each unit subject to an opacity limit and required to conduct periodic monitoring and which periodic monitoring step(s) in permit condition 8.1 is applicable to each unit;
3. Results of all visible emission readings and visible emission tests required in permit condition 8.1; and
4. A copy of each fuel supplier certification for distillate oil and the results of any distillate oil grab sample analysis;
5. The following information shall be recorded within two days of each emergency exceedance:
  - a. The date of the emergency exceedance and the date the emergency exceedance was reported to the Secretary;
  - b. The cause(s) of the emergency;
  - c. The reasonable steps taken to minimize the emissions during the emergency; and
  - d. A statement the permitted equipment was at the time being properly operated.

### **5.5 Annual records**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall calculate and record the following amounts from January 1 to December 31 of each year:

1. The amount of natural gas burned in each unit during the calendar year;
2. The amount of distillate oil burned in each unit during the calendar year;



3. The actual operating time for Unit #3, #4c, #4d, #4f, #11a, #11b, #25, #27, #28, #29, #31, and #34;
4. The amount of volatile organic compounds and hazardous air pollutants emitted from Units #4a, #4b, #4c, #4d, and #4e that is not passed through Unit #4f, and Units #7, #8, and #17 through #22, #32, #33, #35, #36, and #37; and
5. The amount of resin transferred through Units #9a, #9b, #9c, #9d, #10a, #10b, and #10c.

## **5.6 Annual compliance certification**

In accordance with ARSD 74:36:05:16.01(14), the owner or operator shall submit an annual compliance certification letter to the Secretary by March 1 of each year this permit is in effect (NOTE: The Secretary will forward a copy of the certification letter to EPA). The certification shall contain the following information:

1. Methods used to determine compliance, including: monitoring, recordkeeping, performance testing and reporting requirements;
2. The source is in compliance and will continue to demonstrate compliance with all applicable requirements;
3. In the event the source is in noncompliance, a compliance plan that indicates how the source has or will be brought into compliance; and
4. Certification statement required in permit condition 5.3.

## **5.7 Reporting permit violations**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall report all permit violations. A permit violation should be reported as soon as possible, but no later than the first business day following the day the violation was discovered. The permit violation may be reported by telephone to the South Dakota Department of Environment and Natural Resources at (605) 773-3151 or by FAX at (605) 773-4068.

A written report shall be submitted within five days of discovering the permit violation. Upon prior approval from the Secretary, the submittal deadline for the written report may be extended up to 30 days. The written report shall contain:

1. A description of the permit violation and its cause(s);
2. The duration of the permit violation, including exact dates and times; and
3. The steps taken or planned to reduce, eliminate, and prevent reoccurrence of the permit violation.

## **6.0 Control of Regulated Air Pollutants**

### **6.1 Visibility limit**

In accordance with ARSD 74:36:12:01, the owner or operator may not discharge into the ambient air an air contaminant of a density equal to or greater than that designated as 20 percent opacity from any permitted unit, operation, or process listed in Table 1-1, unless otherwise specified in this permit. This provision does not apply when the presence of uncombined water is the only reason for failure to meet the requirement.

## **6.2 Visibility exceedances**

In accordance with ARSD 74:36:12:02, an exceedance of the opacity limit in permit condition 6.1 is not considered a violation during brief periods of soot blowing, start-up, shutdown, or malfunctions. Malfunction means any sudden and unavoidable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. A failure caused entirely or in part by poor maintenance, careless operation, preventable equipment breakdown, or any other cause within the control of the owner or operator is not a malfunction and is considered a violation.

## **6.3 Total suspended particulate matter limits**

In accordance with ARSD 74:36:06:02(1) and/or ARSD 74:36:06:03(1), the owner or operator shall not allow the emission of total suspended particulate matter in excess of the emission limit specified in Table 6-1 for the appropriate permitted unit, operation, and process.

**Table 6-1 – Total Suspended Particulate Matter Emission Limit**

<b>Unit</b>	<b>Description</b>	<b>Emission Limit</b>
<b>#4f</b> <sup>1</sup>	Regenerative thermal oxidizer	0.5 pounds per million Btu heat input
<b>#9a</b>	Resin silo	5.1 pounds per hour
<b>#9b</b>	Resin silo	5.1 pounds per hour
<b>#9c</b>	Resin silo	5.1 pounds per hour
<b>#9d</b>	Resin silo	5.1 pounds per hour
<b>#10a</b>	Transfer from silos to extruders	5.1 pounds per hour
<b>#10b</b>	Transfer from silos to extruders	5.1 pounds per hour
<b>#10c</b>	Transfer from silos to extruders	5.1 pounds per hour
<b>#11a</b>	4K maker line, Oven #1	0.6 pounds per million Btu heat input
<b>#11b</b>	4K maker line, Oven #2	0.6 pounds per million Btu heat input
<b>#27</b>	Diesel engine #1	0.6 pounds per million Btus heat input
<b>#28</b>	Boiler #4	0.5 pounds per million Btu heat input
<b>#29</b>	Boiler #5	0.5 pounds per million Btu heat input
<b>#34</b>	Emergency fire pump	0.6 pounds per million Btu heat input

<sup>1</sup> – The emissions from the regenerative thermal oxidizer may pass through the stack associated with Unit #4f or may pass through the stack associated with Unit #3. In either case, the particulate limit is applicable to both stacks.

## **6.4 Sulfur dioxide limits**

In accordance with ARSD 74:36:06:02(2) and/or ARSD 74:36:06:03(2), the owner or operator shall not allow the emission of sulfur dioxide in excess of the emission limit specified in Table 6-2 for the appropriate permitted unit, operations, and process.

**Table 6-2 – Sulfur Dioxide Emission Limit**

<b>Unit</b>	<b>Description</b>	<b>Emission Limit</b>
<b>#4f</b> <sup>1</sup>	Regenerative Thermal Oxidizer	3.0 pounds per million Btu heat input
<b>#11a</b>	4K maker line, Oven #1	3.0 pounds per million Btu heat input
<b>#11b</b>	4K maker line, Oven #2	3.0 pounds per million Btu heat input
<b>#25</b>	Diesel engine #2	3.0 pounds per million Btu heat input
<b>#27</b>	Diesel engine #1	3.0 pounds per million Btu heat input

Unit	Description	Emission Limit
#28	Boiler #4	3.0 pounds per million Btu heat input
#29	Boiler #5	3.0 pounds per million Btu heat input
#34	Emergency fire pump	3.0 pounds per million Btu heat input

<sup>1</sup> – The emissions from the regenerative thermal oxidizer may pass through the stack associated with Unit #4f or may pass through the stack associated with Unit #3. In either case, the sulfur dioxide limit is applicable to both stacks.

Compliance with the sulfur dioxide emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods.

#### **6.5 Air emission exceedances – emergency conditions**

In accordance with ARSD 74:36:05:16.01(18), the Secretary will allow for an unavoidable emission exceedance of a technology-based emission limit if the exceedance is caused by an emergency condition and immediate action is taken by the owner or operator to restore the operations back to normal. An emergency condition is a situation arising from a sudden and reasonably unforeseeable event beyond the control of the owner or operator, including acts of God. An emergency shall not include an emission exceedance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. The owner or operator shall notify the Secretary within two working days of the incident and take all steps possible to eliminate the excess emissions. The notification shall provide a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. If the notification is submitted orally, a written report summarizing the information required by the notification shall be submitted and postmarked within 30 days of the oral notification.

#### **6.6 Circumvention not allowed**

In accordance with ARSD 74:36:05:47.01, the owner or operator may not install, use a device, or use a means that conceals or dilutes an air emission that would otherwise violate this permit. This includes operating a unit or control device that emits air pollutants from an opening other than the designed stack, vent, or equivalent opening.

#### **6.7 Minimizing emissions**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall at all time, when practicable, maintain and operate all permitted units in a manner that minimizes air pollution emissions, unless otherwise specified in the permit.

### **7.0 Performance Tests**

#### **7.1 Performance test may be required**

In accordance with ARSD 74:36:11:02, the Secretary may request a performance test during the term of this permit. A performance test shall be conducted while operating the unit at or greater than 90 percent of its maximum design capacity, unless otherwise specified by the Secretary. A performance test conducted while operating less than 90 percent of its maximum design capacity will result in the operation being limited to the percent achieved during the performance test.

The Secretary has the discretion to extend the deadline for completion of performance test required by the Secretary if circumstances reasonably warrant but will not extend the deadline past a federally required performance test deadline.

## **7.2 Test methods and procedures**

In accordance with ARSD 74:36:11:01, the owner or operator shall conduct the performance test in accordance with 40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A, and 40 CFR Part 51, Appendix M. The Secretary may approve an alternative method if a performance test specified in 40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A, and 40 CFR Part 51, Appendix M is not federally applicable or federally required.

## **7.3 Representative performance test**

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.8(c), performance tests shall be conducted under such conditions as the Secretary shall specify to the owner or operator based on the representative performance of the unit being tested. The owner or operator shall make available to the Secretary such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in this permit.

## **7.4 Submittal of test plan**

In accordance with ARSD 74:36:11:01, the owner or operator shall submit the proposed testing procedures to the Secretary at least 30 days prior to any performance test. The Secretary will notify the owner or operator if the proposed test procedures are approved or denied. If the proposed test procedures are denied, the Secretary will provide written notification outlining what needs to be completed for approval.

## **7.5 Notification of test**

In accordance with ARSD 74:36:11:03, the owner or operator shall notify the Secretary at least 10 days prior to the start of a performance test to arrange for an agreeable test date when the Secretary may observe the test. The Secretary may extend the deadline for the performance test in order to accommodate schedules in arranging an agreeable test date.

## **7.6 Performance test report**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall submit a performance test report to the Secretary within 60 days after completing the performance test or by a date designated by the Secretary. The performance test report shall contain the following information:

1. A brief description of the process and the air pollution control system being tested;
2. Sampling location description(s);
3. A description of sampling and analytical procedures and any modifications to standard procedures;
4. Test results represented in the same terminology as the permit limits;

5. Quality assurance procedures and results;
6. Records of operating conditions during the test necessary for demonstrating compliance with the permit limits, preparation of standards, and calibration procedures;
7. Raw data sheets for field sampling and field and laboratory analyses;
8. Documentation of calculations;
9. All data recorded and used to establish parameters for compliance monitoring; and
10. Any other information required by the test method.

### **7.7 Performance test to verify compliance**

In accordance with ARSD 74:36:11:02, the owner or operator shall conduct a stack performance test on the following units under the specified operating conditions and air pollutants:

1. Units #4a, #4b and #4c to determine the volatile organic compound capture efficiency;
2. Unit #4f to determine the removal efficiency of volatile organic compounds; and
3. Units #28 and #29 for nitrogen oxide emissions.

The performance tests shall be conducted within one of year of this permit being issued.

## **8.0 Monitoring**

### **8.1 Periodic opacity monitoring**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall demonstrate compliance with the opacity limits in permit condition 6.1 on a periodic basis, except Unit #3, #4a, #4b, #4c, #4d, #4e, #7, #8, #13a, #13b, #17 through #22, #24, and #31 through #37. Periodic monitoring for units that operate at least once per month or more frequently shall be based on Steps 1 and 2.

**Step 1:** Periodic monitoring shall consist of a visible emission reading. A visible emission reading shall consist of a visual survey of each unit over a two-minute period to identify if there are visible emissions. The visible emission reading must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions. Visible emission readings shall be based on the following frequency:

- a. The owner or operator shall conduct a visible emission reading once per calendar month;
- b. If no visible emissions are observed from a unit in six consecutive monthly visible emission readings, the owner or operator may decrease the frequency of readings from monthly to semiannually for that unit; or
- c. If no visible emissions are observed from a unit in two consecutive semiannual visible emission readings, the owner or operator may decrease the frequency of testing of readings from semiannually to annually for that unit.

The owner or operator may skip Step 1 and conduct a visible emission test as required under Step 2 once per calendar month.

**Step 2:** If visible emissions are observed during a visible emission reading required in Step 1 from a unit at any time other than periods of startup, shutdown, or malfunction, the owner or operator shall conduct a visible emission test to determine if the unit is in compliance with its applicable opacity limit. The visible emission test shall be for at least six minutes and conducted in accordance with 40 CFR Part 60, Appendix A, Method 9. The visible emission test must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions. Visible emission tests shall be based on the following frequency:

- a. The 6-minute visible emission test must be conducted within one hour of witnessing a visible emission from a unit;
- b. If the visible emission test required in Step 2(a) results in an opacity value less than or equal to 50 percent of the opacity limit for the unit, the owner or operator shall perform a 6-minute visible emission test once per month;
- c. If the opacity value of a 6-minute visible emission test in Step 2(b) is less than five percent for three straight monthly tests, the owner or operator may revert back to 2-minute monthly visible emission readings as required in Step 1(a);
- d. If the 6-minute visible emission test required in Step 2(a) results in an opacity value greater than 50 percent of the opacity limit but less than the opacity limit, the owner or operator shall perform a 6-minute visible emission test once per week; or
- e. If the 6-minute visible emission test in Step 2(d) results in an opacity value less than or equal to 50 percent of the opacity limit for four straight weekly readings, the owner or operator may revert back to a 6-minute monthly visible emission test as required in Step 2(b).

Periodic monitoring for units that operate less frequently than once per month; but more frequently than once per quarter shall be based on Step 3.

**Step 3:** Periodic monitoring shall consist of the following:

- a. Monitoring shall consist of a visible emission reading once per quarter. A visible emission reading shall consist of a visual survey of the unit over a two-minute period to identify if there are visible emissions. The visible emission reading must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions;
- b. If visible emissions are observed from a unit at any time other than periods of startup, shutdown, or malfunction, the owner or operator shall conduct a visible emission test on that unit to determine if the unit is in compliance with its opacity limit. The visible emission test must be conducted within one hour of witnessing visible emissions from the unit during a visible emission reading. The visible emission test shall be for at least six minutes and conducted in accordance with 40 CFR Part 60, Appendix A, Method 9. The visible emission test must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions.

Periodic monitoring for units that operate less frequently than once per quarter but more frequently than once annually shall be based on Step 4.

**Step 4:** Periodic monitoring shall consist of the following:

- a. Monitoring shall consist of a visible emission reading once per year. A visible emission reading shall consist of a visual survey of the unit over a two-minute period to identify if there are visible emissions. The visible emission reading must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions;
- b. If visible emissions are observed from a unit at any time other than periods of startup, shutdown, or malfunction, the owner or operator shall conduct a visible emission test on that unit to determine if the unit is in compliance with its opacity limit. The visible emission test must be conducted within one hour of witnessing visible emissions from the unit during a visible emission reading. The visible emission test shall be for at least six minutes and conducted in accordance with 40 CFR Part 60, Appendix A, Method 9. The visible emission test must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions.

The person conducting the visible emission reading does not have to be certified in accordance with 40 CFR Part 60, Appendix A, Method 9. A person conducting a visible emission test must be certified in accordance with 40 CFR Part 60, Appendix A, Method 9. If a visible emission test is required before a person is certified in accordance with permit condition 8.2, the owner or operator shall notify the Secretary within 24 hours of observing the visible emissions to schedule a visible emission test performed by a state inspector.

**8.2 Certified personnel – visible emission tests**

In accordance with ARSD 74:36:13:07, within 180 days after permit issuance the owner or operator shall retain a person that is certified to perform a visible emission test in accordance with 40 CFR Part 60, Appendix A, Method 9. The owner or operator shall retain a certified person throughout the remaining term of this permit.

**8.3 Monitoring sulfur content of distillate oil**

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall obtain a fuel supplier certification for each load of distillate oil (diesel) purchased or received. The fuel supplier certification shall include the following information:

1. The name of the oil supplier;
2. A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil (diesel). Distillate oil (diesel) means fuel oil that complies with the specifications for fuel oil numbers 1 or 2. Residual oil means crude oil and is fuel oil that does not comply with the specifications under the definition of distillate oil and includes all fuel oil numbers 4, 5, and 6. Specifications for fuel oils are defined in the American Society for Testing and Materials in ASTM D396-78, "Standards Specifications for Fuel Oils"; and
3. A statement that the sulfur content of the oil does not exceed 0.5 weight percent sulfur.

In the case where a fuel supplier certification is not obtained, the owner or operator shall collect a grab sample from the storage tank within 30 days of receiving the shipment of distillate oil

(diesel) but before another load is transferred into the storage tank. The grab sample shall be analyzed to determine the sulfur content of the distillate oil (diesel) in the storage tank.

## **9.0 Prevention of Significant Deterioration Requirements**

### **9.1 BACT limits for volatile organic compounds**

In accordance with ARSD 74:36:09:02, as referenced to 40 CFR § 52.21(j)(3), the owner or operator shall not allow the emissions of volatile organic compounds from Unit #4e to have less than a 96 percent overall control efficiency per month except when coating products with a volatile organic compound content less than 4% are used.

### **9.2 Nitrogen oxide limit for Unit #28 and #29**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not allow the emissions of nitrogen oxide from Unit #28 and #29 in excess of 0.04 pounds per million Btus while firing natural gas.

### **9.3 Coating line long term VOC emission limit – Unit #4a**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall limit the volatile organic compound emissions from Unit #4a to less than or equal to 264 tons of volatile organic compound emission per 12-month period. Compliance with the volatile organic compound emission limit shall be based on a 12-month rolling total.

### **9.4 Coating line volatile organic compound input limits**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not allow the input of volatile organic compound emission to Unit #4a, #4b, #4c, #4d, and #4e in excess of the emission limits specified in Table 9-1 for the appropriate permitted unit, operation or process.

***Table 6-3 – Volatile Organic Compound Emission Input Limit***

<b>Unit</b>	<b>Description</b>	<b>Volatile Organic Compound Input Limit</b>
<b>#4a</b>	M1 coating line	2,300 pounds per hour
<b>#4b</b>	M2 coating line	3,300 pounds per hour
<b>#4c</b>	M3 coating line	6,500 pounds per hour
<b>#4d</b>	M4 coating line	3,500 pounds per hour
<b>#4e</b>	M6 coating line	3,500 pounds per hour

### **9.5 Bypassing regenerative thermal oxidizer - Units #4a, #4b, and #4c**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator may allow the emissions from the Unit #4a, #4b, and #4c to bypass the regenerative thermal oxidizer (Unit #4f) for the following reasons:

1. Times when the control device is not operating due to startup, shutdown, and malfunctions of the control device. A failure caused entirely or in part by poor maintenance, careless operation, preventable equipment breakdown, or any other cause within the control of the owner or operator of the source is not considered a malfunction; or



2. Times when preventative maintenance is being conducted on the regenerative thermal oxidizer. Excessive preventative maintenance caused entirely or in part by poor maintenance, careless operation or any other cause within the control of the owner operator is not considered preventative maintenance; or
3. Times when water-based coating solutions are being used on the coating line(s). To be considered a water-based coating solution, the solution shall not contain more than five percent volatile organic compounds; and
4. The owner or operator can demonstrate compliance with permit condition 9.6 during the bypass.

#### **9.6 Overall control efficiency for Units #4a, #4b, #4c, #4d, and #4e**

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall maintain a 93 percent volatile organic compound control efficiency for Units #4a, #4b, #4c, #4d, and #4e when passing the exhaust gases through the regenerative thermal oxidizer. The overall control efficiency for the regenerative thermal oxidizer shall be determined by the calculation by Equation 9-2.

#### **9.7 Monthly coating records for Units #4a, #4b, #4c, #4d, and #4e**

In accordance with ARSD 74:36:09:02, as referenced to ARSD 74:36:05:16.01(9), the owner or operator shall record and maintain the following information on a monthly basis:

1. A monthly record of the amount of volatile organic compound emissions, in tons, emitted into the ambient air from Unit #4a, #4b, and #4c when the exhaust gases are not passed through the regenerative thermal oxidizer;
2. A monthly record of all coatings used by Units #4a, #4b, #4c, #4d, and #4e when the exhaust gases are passed through the regenerative thermal oxidizer;
3. Calculate the amount of volatile organic compounds, in tons, emitted into the ambient air from Units #4a, #4b, #4c, #4d, and #4e during the month when the exhaust gases are passed through the regenerative thermal oxidizer using Equation 9-1;

#### ***Equation 9-1 – Calculating Units #4a, #4b, #4c, #4d, and #4e emissions***

$$E_{VOC} = (VOC_{input} \times CE \times (1 - DE)) + (VOC_{input} \times (1 - CE))$$

Where:

- $E_{VOC}$  = Monthly volatile organic compound emissions, in tons, from the coating line through regenerative thermal oxidizer;
  - $VOC_{input}$  = Quantity of volatile organic compounds, in tons, inputted to the coating line when exhaust gases from the coating line are passed through the regenerative thermal oxidizer;
  - CE = Capture efficiency of the coating line capture system based on the most recent capture efficiency test; and
  - DE = Destruction efficiency of the regenerative thermal oxidizer as determined by the most recent destruction efficiency test.
4. The overall volatile organic control efficiency for Units #4a, #4b, #4c, #4d, and #4e shall be calculated for the regenerative thermal oxidizer using Equation 9-2; and

**Equation 9-2 – Overall VOC control efficiency for Units #4a, #4b, #4c, #4d, and #4e**

$$EF = \frac{(((1 - (CE_{M1} \times (1 - DE_{M1})) + (1 - CE_{M1}))) + (1 - (CE_{M2} \times (1 - DE_{M2})) + (1 - CE_{M2}))) + (1 - (CE_{M3} \times (1 - DE_{M3})) + (1 - CE_{M3}))) + (1 - (CE_{M4} \times (1 - DE_{M4})) + (1 - CE_{M4}))) + (1 - (CE_{M5} \times (1 - DE_{M5})) + (1 - CE_{M5})))}{(\text{the number of coating lines operated} - 0 \text{ through } 5)} \times 100$$

Where:

- EF = Overall volatile organic compound control efficiency;
  - CE = Capture efficiency of the coating line capture system based on the most recent capture efficiency test; and
  - DE = Destruction efficiency of the regenerative thermal oxidizer as determined by the most recent destruction efficiency test.
5. Calculate the amount of volatile organic compounds, in tons, emitted into the ambient air from Unit #4a during the month and during the 12-month rolling period for that month. The monthly volatile organic compounds emissions from Unit #4a is the summation of paragraph (2) and (3) of this permit condition as it relates to Unit #4a;
  6. The number of hours Units #4a, #4b, #4c, #4d, and #4e operated each month; and
  7. Calculate the volatile organic compound emission input for Units #4a, #4b, #4c, #4d, and #4e, in pounds per hour, each month by dividing the summation of paragraph (1) and (2) of this permit condition by paragraph (6) of this permit condition for each applicable unit.

**9.8 Quarterly PSD reports**

In accordance with ARSD 74:36:09:02, as referenced to ARSD 74:36:05:16.01(9), the owner or operator shall submit quarterly reports. The quarterly reports shall be submitted until permit #28.9901-06 has been revised and includes the equipment listed in Table 1-1. The report shall contain the following information:

1. Name of the facility, permit number, reference to this permit condition, and identify the submittal as a quarterly report;
2. Calendar dates covered in the quarterly report;
3. The quantity of volatile organic compounds emitted from the M1, M2, M3, M4, and M6 coating lines, in tons, in each month and the 12-month rolling total for each month in the reporting period and supporting documentation; and
4. Overall volatile organic compound emission control efficiency for Units #4a, #4b, #4c, #4d, and #4e, in percent, for each month in the reporting period, the 12-month rolling total for each month in the reporting period, and supporting documentation.

The quarterly reports shall cover the periods January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year. The information required from other quarterly reports required in this permit may be combined with this quarterly report and submitted together. The quarterly reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar quarter (i.e., January 30<sup>th</sup>, April 30<sup>th</sup>, July 30<sup>th</sup>, and October 30<sup>th</sup>).

## **10.0 Boiler NSPS Requirements (Units #28 and #29)**

### **10.1 Fuel records**

In accordance with ARSD 74:36:07:05, as referenced to 40 CFR § 60.48c(g) and (i), the owner or operator shall record and maintain the amount of fuel combusted in Units #28 and #29 according to one of the following methods:

1. The amount and type of fuel combusted during each operating day;
2. The amount of each fuel combusted during each calendar month; or
3. The amount of each type of fuel delivered to the property during each calendar month.

All records shall be maintained for a period of two years following the date of such record.

### **10.2 Changing Units #28 and #29 fuel**

In accordance with ARSD 74:36:07:05, as referenced to 40 CFR § 60.40c, Units #28 and #29 shall be fired with natural gas. If Units #28 and #29 are fueled with other fuels such as coal, oil, or wood, additional standards and requirements in 40 CFR Part 60, Subpart Dc may apply. The owner or operator shall apply for and obtain approval from the Secretary before other fuels can be used as a fuel in Units #28 and #29.

## **11.0 Coating Line NSPS Requirements – Units #4d, #4e, #17, and #18**

### **11.1 VOC emission limit**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR §§ 60.440(b), 60.442(a), and 60.443(j), the owner or operator shall:

1. Cause the discharge into the atmosphere from Units #4d and #4e of not more than 0.20 kilograms of volatile organic compounds (VOC) per kilogram of coating solids applied per unit as calculated on a weighted average basis for one calendar month; or
2. Demonstrate Units #4d and #4e each have:
  - a. A 90 percent overall volatile organic compound emission reduction as calculated over a calendar month; or
  - b. The percent overall volatile organic compound emission reduction specified in permit condition 11.3 as calculated over a calendar month.

The owner or operator shall include the startup and shutdown emissions from Units #4d and #4e when determining if the 90 percent overall volatile organic compound emission reduction is attained.

### **11.2 Determining compliance with weighted average**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR §§ 60.443(a), 60.444(a), and 60.446(a), if the owner or operator determines Units #4d's and/or #4e's compliance with paragraph (1) of permit condition 11.1, the owner or operator shall calculate the weighted average mass (kilograms) of volatile organic compounds per mass (kilogram) of coating solids applied "G" each calendar month. "G" shall be based on the following procedures:

1. Determine the weight fraction of organics and the weight fraction of solids of each coating applied by using 40 CFR, Part 60, Appendix A, Reference Method 24 or by the coating manufacturer's formulation data. In the event of any inconsistency between a Method 24 test and manufacturers' formulation data, the Method 24 test will govern. The Secretary may require an owner or operator to perform Method 24 tests during such months as deemed appropriate. For Method 24, the coating sample shall be a one liter sample taken into a one liter container at a point where the sample will be representative of the coating applied to the web substrate; and
2. Compute the weighted average using Equation 11-1.

***Equation 11-1 – Calculating weighted average VOC per coating solids applied***

$$G = \frac{\sum_{i=1}^n W_{oi} M_{ci}}{\sum_{i=1}^n W_{si} M_{ci}}$$

Where:

- G = the calculated weighted average mass (kilograms) of volatile organic compounds per mass (kilograms) of coating solids applied each calendar month;
- $M_{ci}$  = the total mass (kilograms) of each coating, i, applied during the calendar month as determined from records;
- $W_{oi}$  = the weight fraction of organics applied of each coating, i, applied during a calendar month as determined from 40 CFR Part 60, Appendix A, Reference Method 24 or coating manufacturer's formulation data; and
- $W_{si}$  = the weight fraction of solids applied of each coating, i, applied during a calendar month as determined from 40 CFR Part 60, Appendix A, Reference Method 24 or coating manufacturer's formulation data.

For each unit where the value of "G" is less than or equal to 0.20 kilograms volatile organic compounds per kilogram of coating solids applied, the unit is in compliance with paragraph (1) of permit condition 11.1.

**11.3 Determining monthly overall VOC emission reduction**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.443(b), if the owner or operator determines Units #4d's and/or #4e's compliance with paragraph (2)(a) of permit condition 11.1, the owner or operator shall calculate the required overall volatile organic compound emission reduction " $R_q$ " each month. " $R_q$ " shall be based on Equation 11-2.

***Equation 11-2 – Overall volatile organic compound emission reduction***

$$R_q = \frac{G - 0.20}{G} \times 100$$

Where:

- G = the calculated weighted average mass (kilograms) of volatile organic compounds per mass (kilograms) of coating solids applied each calendar month; and

- $R_q$  = the required overall volatile organic compound emission reduction (in percent).

If “ $R_q$ ” is less than or equal to 90 percent, then the required overall volatile organic compound emission reduction is “ $R_q$ ”. If the “ $R_q$ ” is greater than 90 percent, then the required overall volatile organic compound emission reduction is 90 percent.

#### **11.4 Determining monthly overall VOC emission reduction**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.443(i), if the owner or operator determines Units #4d’s and/or #4e’s compliance with paragraph (2)(b) of permit condition 11.1 and volatile organic compound emissions from Units #4d and/or #4e are destroyed as well as volatile organic compound emissions from Units #4a, #4b, and/or #4c by Unit #4f, the monthly overall volatile organic compound reduction for Units #4d and/or #4e, for the purpose of compliance shall be determined as follows:

1. The owner or operator shall operate Unit #4f during the performance test with Units #4a, #4b, #4c, #4d, and #4e connected and operating;
2. The concentration of volatile organic compounds (in parts per million by volume) after Unit #4f shall be determined as specified in permit condition 11.9; and
3. The volumetric flow out of Unit #4f attributable to Units #4d and/or #4e shall be calculated by first determining the ratio of the volumetric flow entering Unit #4f attributed to Units #4d and/or #4e to the total volumetric flow entering Unit #4f from all five units. The multiplication of this ratio by the total volumetric flow out of Unit #4f yields the flow attributable to Units #4d and #4e.

The monthly overall volatile organic compound emission reduction is determined by Equation 11-3.

#### ***Equation 11-3 – Overall volatile organic compound emission reduction***

$$R = \frac{\sum_{i=1}^n Q_{bi} C_{bi} - \sum_{j=1}^m Q_{aj} C_{aj}}{\sum_{i=1}^n Q_{bi} C_{bi} + \sum_{k=1}^p Q_{fk} C_{fk}} \times 100$$

Where:

- $C_{aj}$  = the concentration of volatile organic compound (carbon equivalent) in each gas stream, j, exiting the emission control device, in parts per million by volume;
- $C_{bi}$  = the concentration of volatile organic compound (carbon equivalent) in each gas stream, i, entering the emission control device, in parts per million by volume;
- $C_{fk}$  = the concentration of volatile organic compound (carbon equivalent) in each gas stream, k, emitted directly to the atmosphere, in parts per million by volume;
- $Q_{aj}$  = the volumetric flow rate of each effluent gas stream, j, exiting the emission control device, in dry standard cubic meters per hour;
- $Q_{bi}$  = the volumetric flow rate of each effluent gas stream, i, entering the emission control device, in dry standard cubic meters per hour;
- $Q_{fk}$  = the volumetric flow rate of each effluent gas stream, k, emitted directly to the atmosphere, in dry standard cubic meters per hour; and
- R = the overall volatile organic compound emission reduction achieved for a calendar month (in percent).

### **11.5 Determining compliance with overall VOC emission reduction**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.443(d), if the owner or operator determines Units #4d's and/or #4e's compliance with paragraph (2)(b) of permit condition 11.1, the owner or operator shall compare the monthly required overall volatile organic compound emission reduction calculated in permit condition 11.3 or if applicable, permit condition 11.4, to the overall volatile organic compound reduction demonstrated in the most recent performance test. Compliance is achieved if the monthly required overall volatile organic compound emission reduction is less than or equal to the overall volatile organic compound emission reduction of the most recent performance test.

### **11.6 Continuous temperature monitoring and records**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR §§ 60.443(e) and 60.445(e), the owner or operator shall install, calibrate, maintain, and operate a monitoring device which continuously indicates and records the temperature of the exhaust gases from Unit #4f when operational. The monitoring device shall have an accuracy of the greater of plus or minus 0.75 percent of the temperature being measured expressed in degrees Celsius or plus or minus 2.5 degrees Celsius. The owner or operator shall record all 3-hour periods during actual coating operations when the average temperature of Unit #4f is more than 28 degrees Celsius (50 degrees Fahrenheit) below the average temperature determined by the most recent performance test.

### **11.7 Hood or enclosure monitor for Units #4d and #4e**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.445(g), if the owner or operator uses a hood or enclosure to capture fugitive volatile organic compound emissions for destruction in Unit #4f, the owner or operator shall install, calibrate, maintain, and operate a monitoring device or monitoring devices that continuously indicates the hood or enclosure used to capture fugitive volatile organic compound emissions from Units #4d and/or #4e is operating. This permit condition is not required if the owner or operator can demonstrate that the hood or enclosure system is interlocked with Units #4d's and/or #4e's recirculation air system.

### **11.8 Performance test methods**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.446(b), the owner or operator shall use 40 CFR Part 60, Appendix A, Method 25 to determine the volatile organic compound concentration, in parts per million by volume, of each effluent gas stream entering and exiting Unit #4f. The owner or operator shall use 40 CFR Part 60, Appendix A, Methods 1, 2, 3, and 4 to determine the sampling location, volumetric flow rate, molecular weight, and moisture of all sampled gas streams. For Method 25, the sampling time for each of the three runs shall be at least one hour. The minimum sampling volume shall be 0.003 dry standard cubic meters. The Secretary may approve shorter sampling times or smaller volumes, when necessitated by process variables or other factors.

### **11.9 Performance test procedures**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR §§ 60.443(g) and 60.444(c), the owner or operator shall conduct performance tests as follows:

1. The performance of Unit #4f shall be determined by averaging the results of the three test runs;

2. Determine prior to each test run the weighted average mass of volatile organic compound per mass of coating solids applied being used in Units #4d and #4e. The weighted average shall be determined as specified in permit condition 11.2. In this application, the quantities of  $W_{oi}$ ,  $W_{si}$ , and  $M_{ci}$  shall be determined for the time period of each test run;
3. Calculate the required percent overall volatile organic compound emission reduction as specified in permit condition 11.3; and
4. Determine the percent overall volatile organic compound emission reduction of Unit #4f by Equation 11-3 and the following procedures:
  - a. The owner or operator shall construct the overall volatile organic compound emission reduction system so that all volumetric flow rates and total volatile organic compound emissions can be accurately determined by the applicable test methods and procedures;
  - b. The owner or operator shall construct a temporary total enclosure around Units #4d's and #4e's applicator and flash off area during the performance test for the purpose of capturing fugitive volatile organic compound emissions. If a permanent total enclosure exists and the owner or operator demonstrates the enclosure totally captures fugitive volatile organic compound emissions, then no additional enclosure is required; and
  - c. Compliance with paragraph (2) of permit condition 11.1 is demonstrated where the value of  $R$  calculated in Equation 11-3 is greater than or equal to the value of  $R_q$  calculated in Equation 11-2.

The performance results for Unit #4f are assumed to be equal for Units #4d and #4e.

#### **11.10 Monthly coating records**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR §§ 60.440(b) and 60.445(a) and (d), the owner or operator shall maintain a calendar month record of all coatings used by Units #4d, #4e, #17, and #18 and the results of the reference test method specified in permit condition 11.2 or the manufacturer's formulation data used for determining the volatile organic compound content of those coatings. A 12-month rolling total for each unit shall be calculated every month using that month's value and the previous 11 months' values.

#### **11.11 Reporting VOC emission limit exceedances**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.447(b), the owner or operator shall submit a quarterly report to the Secretary of exceedances of the volatile organic emission limits specified in permit condition 11.1. If no such exceedances occur during a particular quarter, this quarterly report is not required but a report stating this shall be submitted in the semiannual report required in permit condition 11.12.

The quarterly reports shall cover the periods January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year. The information required from other quarterly reports required in this permit may be combined with this quarterly report and submitted together. The quarterly reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar quarter (i.e., January 30<sup>th</sup>, April 30<sup>th</sup>, July 30<sup>th</sup>, and October 30<sup>th</sup>).

### **11.12 Semiannual report – temperature exceedances**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.447(c), the owner or operator shall submit a semiannual report to the Secretary of periods when the temperature of Unit #4f drops as defined in permit condition 11.6. The semiannual report shall contain the following information:

1. Name of facility, permit number, reference to this permit condition, identifying the submittal as a quarterly report and calendar dates covered in the reporting period;
2. The number of 3-hour periods during which the average temperature Unit #4f is more than 28 degrees Celsius (50 degrees Fahrenheit) below the average temperature determined by the most recent performance test. If no exceedances occur, the owner or operator shall state this in the report; and
3. Identify the average temperature determined by the most recent performance test.

The semiannual reports shall cover the periods January 1 through June 30 and July 1 through December 31 of each year. The information required from other semiannual reports required in this permit may be combined with this semiannual report and submitted together. The semiannual reports shall be postmarked or delivered no later than January 30 or July 30 of each year. The semiannual reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar half (i.e., January 30<sup>th</sup> and July 30<sup>th</sup>).

### **11.13 Recordkeeping requirements**

In accordance with ARSD 74:36:07:21, as referenced to 40 CFR § 60.445(h), the owner or operator shall maintain all records of measurements required in this chapter for at least two years following the date of the measurements.

## **12.0 Flexible Vinyl and Urethane Coating and Printing – Unit #4d**

### **12.1 Volatile organic compound limit**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.582, each owner or operator shall either:

1. Use inks with a weighted average volatile organic compound content less than 1.0 kilogram volatile organic compound per kilogram ink solids for Unit #4d; or
2. Reduce volatile organic compound emissions to the atmosphere by 85 percent from Unit #4d.

### **12.2 Testing methods for determining compliance**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.583(a), the owner or operator shall use the following test procedures to determine compliance with permit condition 12.1:

1. 40 CFR Part 60, Appendix A, Method 24 for analysis of inks. If nonphotochemically reactive solvents are used in the inks, standard gas chromatographic techniques may be used to identify and quantify these solvents. The results of 40 CFR Part 60, Appendix A,



Method 24 may be adjusted to subtract these solvents from the measured volatile organic compound content;

2. 40 CFR Part 60, Appendix A, Method 25A for volatile organic compound concentration (the calibration gas shall be propane);
3. 40 CFR Part 60, Appendix A, Method 1 for sample and velocity traverses;
4. 40 CFR Part 60, Appendix A, Method 2 for velocity and volumetric flow rates;
5. 40 CFR Part 60, Appendix A, Method 3 for gas analysis; and
6. 40 CFR Part 60, Appendix A, Method 4 for stack gas moisture.

### **12.3 Method for determining weighted average VOC content**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.583(b), the owner or operator shall determine compliance with paragraph (1) of permit condition 12.1 by determining the weighted average volatile organic compound content of the inks according to the following procedures:

1. Determine and record the volatile organic compound content and amount of each ink used at the print head, including the volatile organic compound content and amount of diluent solvent, for any time periods when volatile organic compound emission control equipment is not used;
2. Compute the weighted average volatile organic compound content in accordance with the Equation 12-1.

#### ***Equation 12-1 – Calculating weighted average volatile organic compound content***

$$G = \frac{\sum_{i=1}^n (W_{oi} M_{ci}) + \sum_{j=1}^n (W_{oj} M_{dj})}{\sum_{i=1}^n (M_{ci} W_{si})}$$

Where:

- $G$  = the weighted average mass of volatile organic compound per mass of ink solids applied, in kilograms per kilogram;
  - $M_{ci}$  = the total mass of each ink (i) applied in the time period as determined from plant records, in kilograms;
  - $M_{dj}$  = the total mass of each dilution solvent (j) added at the print line in the time period determined from plant records, in kilograms;
  - $W_{oi}$  = the weight fraction of volatile organic compound in each ink (i) used in the time period as determined from 40 CFR Part 60, Appendix A, Method 24, manufacturer's formulation data, or plant blending records, in kilograms per kilogram;
  - $W_{oj}$  = the weight fraction of volatile organic compound in each dilution solvent (j) added at the print line in the time period determined from 40 CFR Part 60, Appendix A, Method 24, manufacturer's formulation data, or plant blending records, in kilograms per kilogram; and
  - $W_{si}$  = the weight fraction of solids in each ink (i) used in the time period as determined from 40 CFR Part 60, Appendix A, Method 24, manufacturer's formulation data, or plant blending records, in kilograms per kilogram;
3. The weighted average volatile organic compound content of the inks shall be calculated over a period that does not exceed one calendar month, or four consecutive weeks. If the

owner or operator uses an accounting system based on quarters consisting of two 28 calendar day periods and one 35 calendar day period, the owner or operator may use an averaging period of 35 calendar days four times per year, provided the use of such an accounting system is documented in the initial performance test;

4. Each determination of the weighted average volatile organic compound content shall constitute a performance test for any period when volatile organic compound emission control equipment is not used. 40 CFR Part 60, Appendix A, Method 24 or ink manufacturers' formulation data along with plant blending records (if plant blending is done) may be used to determine volatile organic compound content. The Secretary may require the use of Method 24 if there is a question concerning the accuracy of the ink manufacturer's data or plant blending records; and
5. If, during the time periods when emission control equipment is not used, all inks used contain less than 1.0 kilogram volatile organic compound per kilogram ink solids, the owner or operator is not required to calculate the weighted average volatile organic compound content, but shall verify and record the volatile organic compound content of each ink (including any added dilution solvent) used as determined by 40 CFR Part 60, Appendix A, Method 24, ink manufacturers' formulation data, or plant blending records.

#### **12.4 Alternative method for determining weighted average VOC content**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.583(c), the owner or operator may determine compliance with paragraph (1) of permit condition 12.1 by determining the weighted average volatile organic compound content using an inventory system. The inventory system shall meet the following:

1. The Secretary shall approve the inventory system of accounting for volatile organic compound content prior to its use and performance tests.
2. The inventory system shall accurately account to the nearest kilogram for the volatile organic compound content of all inks and dilution solvent used, recycled, and discarded during the averaging period. Separate records shall be kept for Unit #4d;
3. To determine volatile organic compound content of inks and dilution solvent used or recycled, 40 CFR Part 60, Appendix A, Method 24 or ink manufacturers' formulation data shall be used in combination with plant blending records (if blending is done) or inventory records or purchase records for new inks or dilution solvent;
4. For inks to be discarded, only 40 CFR Part 60, Appendix A, Method 24 shall be used to determine the volatile organic compound content. Inks to be discarded may be combined prior to measurement of volume or weight and testing by 40 CFR Part 60, Appendix A, Method 24; and
5. The Secretary may require the use of 40 CFR Part 60, Appendix A, Method 24 if there is a question concerning the accuracy of the ink manufacturer's data or plant records.

#### **12.5 Demonstrating compliance with VOC reduction**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.583(d)(1) through (4), the owner or operator shall demonstrate compliance with paragraph (2) of permit condition 12.1 by conducting a performance test to determine the overall volatile organic compound emission control efficiency according to the following:

1. The performance test shall consist of three runs. Each test run shall last a minimum of 30 minutes and continue until Unit #4d's operation is interrupted or 180 minutes of continuous operation occurs. During each test run, Unit #4d shall be printing continuously and operating normally. The volatile organic compound emission reduction efficiency achieved for each test run is averaged over the entire test run period;
2. The volatile organic compound concentration values at the inlet and outlet of the regenerative thermal oxidizer shall be measured simultaneously;
3. The volumetric flow rate shall be determined from one 40 CFR Part 60, Appendix A, Method 2 measurement for each test run conducted immediately prior to, during, or after that test run. Volumetric flow rates at the inlet and outlet of the thermal oxidizer do not need to be measured simultaneously; and,
4. In order to determine the volatile organic compound capture efficiency, all fugitive volatile organic compound emissions from the print line shall be captured and vented through stacks suitable for measurement. If there are other sources of volatile organic compound emissions, the owner or operator shall isolate Unit #4d from other sources of volatile organic compound emissions during the performance test. These two requirements shall be accomplished using one of the following methods:
  - a. Build a permanent enclosure around Unit #4d;
  - b. Build a temporary enclosure around Unit #4d and duplicate, to an extent that is reasonably feasible, the ventilation conditions that are in effect when Unit #4d is not enclosed. One option is to divide the room exhaust rate by the volume of the room and then duplicate that quotient or 20 air changes per hour, whichever is smaller, in the temporary enclosure; or,
  - c. Shut down all other sources of volatile organic compound emissions and continue to exhaust fugitive emissions from Unit #4d through any building ventilation system and other room exhausts such as print line ovens and embossers.

## **12.6 Compliance with VOC reduction**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.583(d)(5), compliance with paragraph (2) in permit condition 12.1 has been demonstrated if the average value of the overall control efficiency for three runs is equal to or greater than 85 percent. The overall control efficiency is equal to the volatile organic compound reduction efficiency (E) of the regenerative thermal oxidizer multiplied by the volatile organic compound capture efficiency (F) of the vapor capture system. The volatile organic compound reduction efficiency is based on Equation 12-2.

### ***Equation 12-2 – VOC Reduction Efficiency***

$$E = \frac{\sum_{i=1}^n (Q_{bi} C_{bi}) - \sum_{j=1}^m (Q_{aj} C_{aj})}{\sum_{i=1}^n (Q_{bi} C_{bi})}$$

The volatile organic compound capture efficiency is based on Equation 12-3.

### ***Equation 12-3 – VOC Capture Efficiency***

$$F = \frac{\sum_{i=1}^n (Q_{bi} C_{bi})}{\sum_{i=1}^n (Q_{bi} C_{bi}) + \sum_{k=1}^p (Q_{fk} C_{fk})}$$

The symbols for Equation 12-2 and 12-3 mean the following:

1.  $C_{aj}$  = the concentration of the volatile organic compound in each gas stream (j) for the time period exiting the emission control device, in parts per million by volume;
2.  $C_{bi}$  = the concentration of the volatile organic compound in each gas stream (i) for the time period entering the emission control device, in parts per million by volume;
3.  $C_{fk}$  = the concentration of volatile organic compound in each gas stream (k) for the time period which is not directed to an emission control device, in parts per million by volume;
4.  $Q_{aj}$  = the volumetric flow rate of each effluent gas stream (j) exiting the emission control device, in standard cubic meters per hour;
5.  $Q_{bi}$  = the volumetric flow rate of each effluent gas stream (i) entering the emission control device, in standard cubic meters per hour; and
6.  $Q_{fk}$  = the volumetric flow rate of each effluent gas stream (k) not directed to an emission control device, in standard cubic meters per hour.

### **12.7 Monitoring temperature of regenerative thermal oxidizer**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.584(b)(1), the owner or operator shall install, calibrate, maintain, and operate a monitoring device that continuously measures and records the temperature of the regenerative thermal oxidizer's exhaust gases. The continuous monitoring device shall be calibrated annually and have an accuracy of plus or minus 0.75 percent of the temperature being measured, expressed in degrees Celsius, or plus or minus 2.5 degrees Celsius, whichever is greater.

### **12.8 Continuous temperature monitoring records**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.584(b)(2) and (d), the owner or operator shall maintain the following continuous temperature monitoring records:

1. During a performance test, the owner or operator shall determine and record the average temperature of the regenerative thermal oxidizer's exhaust gases.
2. After the performance test, the owner or operator shall determine and record, the average temperature for each 3-hour clock period of printing operation when the average temperature of the exhaust gases is more than 28 °C (50 °F) below the average temperature demonstrated during the most recent performance test; and,
3. Record time periods of operation when the regenerative thermal oxidizer was not operational and Unit #4d was operational.

### **12.9 Semiannual reports for Unit #4d**

In accordance with ARSD 74:36:07:75, as referenced to 40 CFR § 60.585(b) and (c), the owner or operator shall submit a semiannual report to the Secretary. The semiannual report shall include a summary of the following information:

1. Exceedances of the weighted average volatile organic compound content as specified in paragraph (1) of permit condition 12.1; and

2. The date, time, and duration for each period during which the temperature for the regenerative thermal oxidizer drops below the desired temperature specified in paragraph (2) of permit condition 12.8.

The semiannual reports shall cover the periods January 1 through June 30 and July 1 through December 31 of each year. The information required from other semiannual reports required in this permit may be combined with this semiannual report and submitted together. The semiannual reports shall be postmarked or delivered no later than January 30 or July 30 of each year. The semiannual reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar half (i.e., January 30<sup>th</sup> and July 30<sup>th</sup>).

## **13.0 Paper and Other Web Coating MACT – Subpart JJJJ**

### **13.1 Organic HAP limit for paper and other web coating**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.3320(a) and (b) and 63.3330(a), the owner or operator shall limit the organic hazardous air pollutant emissions from Units #4a, #4b, #4c, #4d, #4e, #4f, #17, #18, #20 through #22, #36, and #37, by one or a combination of the following methods:

1. No more than five percent of the organic hazardous air pollutant applied for each month (95 percent reduction); and/or
2. No more than four percent of the mass of coating materials applied for each month; and/or
3. No more than 20 percent of the mass of coating solids applied for each month.

### **13.2 Compliance using as-purchased compliant coating materials**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.3320(c) and 63.3370(a)(1) and (b), the owner or operator may demonstrate compliance with the organic hazardous air pollutant limit in paragraph (2) or (3) in permit condition 13.1 using as-purchased compliant coating materials. The owner or operator is in compliance if each coating material applied during the month contains no more than 0.04 mass fraction organic hazardous air pollutants or 0.2 kilograms organic hazardous air pollutant per kilogram of coating solids on an as-purchased basis.

### **13.3 Determining as-purchased organic hazardous air pollutant content**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(c), if demonstrating compliance using permit condition 13.2, the owner or operator shall determine the organic hazardous air pollutant mass fraction of each coating material as-purchased using one of the following procedures:

1. The owner or operator may test the coating material in accordance with 40 CFR Part 63, Appendix A, Method 311. Method 311 may be performed by the manufacturer of the coating material and the results provided to the owner or operator. The organic hazardous air pollutant content shall be calculated according to the following criteria:

- a. Include each organic hazardous air pollutant determined to be present at greater than or equal to 0.1 mass percent for Occupational Safety and Health Administration (OSHA) defined carcinogens as specified in 29 CFR § 1910.1200(d)(4) and greater than or equal to 1.0 mass percent for other organic hazardous air pollutant compounds;
  - b. Express the mass fraction of each organic hazardous air pollutant included in subparagraph (a) as a value truncated to four places after the decimal point; and
  - c. Calculate the total mass fraction of organic hazardous air pollutant in the tested material by summing the counted individual organic hazardous air pollutant mass fractions and truncating the result to three places after the decimal point; or
2. The owner or operator may test the coatings by determining the volatile organic content as mass fraction of nonaqueous volatile matter and use it as a substitute for organic hazardous air pollutant using 40 CFR Part 60, Appendix A, Method 24. The Method 24 determination may be performed by the manufacturer of the coating and the results provided to the owner or operator; or
  3. The owner or operator may use the formulation data to determine the organic hazardous air pollutant mass fraction of a coating material. Formulation data may be provided to the owner or operator by the manufacturer of the material. In the event of an inconsistency between Method 311 test data and the owner's or operator's formulation data, and the Method 311 test value is higher, the Method 311 data will govern. Formulation data may be used provided that the information represents all organic hazardous air pollutant present at a level equal to or greater than 0.1 percent for OSHA defined carcinogens as specified in 29 CFR § 1910.1200(d)(4) and equal to or greater than 1.0 percent for other organic hazardous air pollutant compounds in any raw material used; or
  4. The owner or operator may submit an alternative test method for determining the organic hazardous air pollutant mass fraction of a coating material. The alternative test method shall be approved in writing by EPA in accordance with 40 CFR § 63.7(f) and the Secretary. The recovery efficiency of the test method shall be determined for all of the target organic hazardous air pollutants and a correction factor, if necessary, shall be determined and applied.

If the as-purchased coating material is applied to the web without any solvent or other material added, then the as-applied organic hazardous air pollutant mass fraction is equal to the as-purchased organic hazardous air pollutant mass fraction. Otherwise, the as-applied organic hazardous air pollutant mass fraction shall be calculated using Equation 13-1.

***Equation 13-1 – Calculating as-applied organic hazardous air pollutant mass fraction***

$$C_{ahi} = \frac{\left( C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}}$$

Where:

- $C_{ahi}$  = Monthly average, as-applied, organic hazardous air pollutant content of coating material, i, expressed as a mass fraction, kilograms/kilograms;
- $C_{hi}$  = Organic hazardous air pollutant content of coating material, i, as-purchased, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material, i, applied in a month, kilograms.
- $q$  = number of different materials add to the coating material;
- $C_{hij}$  = Organic hazardous air pollutant content of material, j, added to as-purchased coating material, i, expressed as mass fraction, kilograms/kilograms; and
- $M_{ij}$  = Mass of material, j, added to as-purchased coating material, i, in a month, kilograms.

#### **13.4 Determining as-purchased volatile organic and coating solids content**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(a)(1) and (d), if the owner or operator chooses to use the volatile organic content as a surrogate for the organic hazardous air pollutant content of coatings, the owner or operator shall determine the as-purchased volatile organic content and coating solids content of each coating material using one of the following procedures:

1. The owner or operator may determine the volatile organic content and coating solids mass fraction of each coating applied using 40 CFR Part 60, Appendix A, Method 24. The Method 24 determination may be performed by the manufacturer of the coating and the results provided to the owner or operator. If the values cannot be determined using Method 24, the owner or operator shall submit an alternative technique for determining these values that shall be approved by the Administrator of EPA and the Secretary; or
2. The owner or operator may use the formulation data to determine the volatile organic content and the coating solids content of a coating material. Formulation data may be provided to the owner or operator by the manufacturer of the material. In the event of an inconsistency between Method 24 test data and the owner's or operator's formulation data, and the Method 24 test value is higher, the Method 24 data will govern.

If the as-purchased coating material is applied to the web without any solvent or other material added, then the as-applied volatile organic content is equal to the as-purchased volatile content and the as-applied coating solids is equal to the as-purchased coating solids content. Otherwise, the as-applied volatile organic content and as-applied coating solids content shall be calculated using Equation 13-2 and 13-3, respectively.

#### **13.5 Compliance using as-applied compliant coating materials**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.3320(c) and 63.3370(a)(2), (a)(5)(ii) and (iii), (a)(6)(i) and (ii), and (c)(5), the owner or operator may demonstrate compliance with the organic hazardous air pollutant limit in paragraph (2) or (3) in permit condition 13.1 using as-applied compliant coating materials. The owner or operator is in compliance if the coating material meets the following:

1. The coating material does not exceed 0.04 kilograms organic hazardous air pollutants per kilogram coating material as-applied each month; or

2. The coating material does not exceed 0.2 kilograms organic hazardous air pollutants per kilogram coating solids as-applied each month; or
3. The monthly average of all coating materials applied does not exceed 0.04 kilograms organic hazardous air pollutants per kilogram coating material, as-applied on a monthly average basis; or
4. The monthly average of all coating materials applied does not exceed 0.2 kilograms organic hazardous air pollutants per kilogram coating solids, as-applied on a monthly average basis.

### **13.6 Determining as-applied compliant coating materials**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3370(c), if demonstrating compliance using permit condition 13.5, the owner or operator shall determine as-applied coating materials by one of the following methods:

1. If demonstrating compliance with paragraph 1 of permit condition 13.5:
  - a. Determine the organic hazardous air pollutant content or volatile organic content of each coating material applied on an as-purchased basis;
  - b. Calculate the as-applied organic hazardous air pollutant content of each coating using Equation 13-1 or calculate the as-applied volatile organic content of each coating material using Equation 13-2; and
  - c. Compliance is achieved if the organic hazardous air pollutant content of each coating material as-applied is no more than 0.04 kilograms organic hazardous air pollutant per kilogram coating material;

#### ***Equation 13-2 – Calculating as-applied volatile organic content***

$$C_{avi} = \frac{\left( C_{vi}M_i + \sum_{j=1}^q C_{vij}M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}}$$

Where:

- $C_{avi}$  = Monthly average, as-applied, volatile organic content of coating material, i, expressed as a mass fraction, kilograms/kilograms;
- $C_{vi}$  = Volatile organic content of coating material, i, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material, i, applied in a month, kilograms;
- $q$  = number of different materials added to the coating material;
- $C_{vij}$  = Volatile organic content of material, j, added to as-purchased coating material, i, expressed as mass fraction, kilograms/kilograms; and
- $M_{ij}$  = Mass of material, j, added to as-purchased coating material, i, in a month, kilograms.

2. If demonstrating compliance with paragraph 2 of permit condition 13.5:



- a. Determine the as-applied coating solids content of each coating material. The owner or operator shall calculate the as-applied coating solid content of coating materials which are reduced, thinned, or diluted prior to application using Equation 13-7; and
- b. Calculate the as-applied organic hazardous air pollutant to coating solids ratio using Equation 13-4.
- c. Compliance is achieved if the organic hazardous air pollutant content of each coating material as-applied is no more than 0.20 kilograms organic hazardous air pollutant per kilogram coating solids;

**Equation 13-7 – Calculating as-applied coatings solid content**

$$C_{asi} = \frac{\left( C_{si}M_i + \sum_{j=1}^q C_{sij}M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}}$$

Where:

- $C_{asi}$  = Monthly average, as-applied, coating solids content of coating material, i, expressed as a mass fraction, kilograms/kilograms;
- $C_{si}$  = Coating solids content of coating material, i, as-purchased, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material, i, applied in a month, kilograms;
- $q$  = Number of different materials added to the coating material;
- $C_{sij}$  = Coating solids content of material, j, added to as-purchased coating material, i, expressed as mass fraction, kilograms/kilograms; and
- $M_{ij}$  = Mass of material, j, added to as-purchased coating material, i, in a month, kilograms.

**Equation 13-4 – Calculating as-applied organic hazardous air pollutant coating solids ratio**

$$H_{si} = \frac{C_{ahi}}{C_{asi}}$$

Where:

- $H_{si}$  = As-applied, organic hazardous air pollutant to coating solids ratio of coating material, i;
- $C_{ahi}$  = Monthly average, as-applied, organic hazardous air pollutant content of coating material, i, expressed as a mass fraction, kilograms/kilograms; and
- $C_{asi}$  = Monthly average, as-applied, coating material, i, expressed as a mass fraction, kilograms/kilograms.

3. If demonstrating compliance with paragraph 3 of permit condition 13.5:
  - a. Use Equation 13-5 to calculate the monthly average as-applied organic hazardous air pollutant content of all coating materials applied; and

- b. Compliance is achieved if the monthly average organic hazardous air pollutant content of all as-applied coating materials are no more than 0.04 kilograms organic hazardous air pollutant per kilogram coating materials;

**Equation 13-5 – Monthly average organic hazardous air pollutant content**

$$H_L = \frac{\sum_{i=1}^p C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} - M_{vret}}{\sum_{i=1}^p M_i + \sum_{j=1}^q M_{ij}}$$

Where:

- $H_L$  = Monthly average, as-applied, organic hazardous air pollutant content of all coating materials applied, expressed as kilograms organic hazardous air pollutant per kilograms of coating material applied, kilograms/kilograms;
  - $p$  = Number of different coating materials applied in a month;
  - $C_{hi}$  = Organic hazardous air pollutant content of coating materials,  $i$ , as-purchased, expressed as a mass fraction, kilograms/kilograms.
  - $M_i$  = Mass of as-purchased coating material,  $i$ , applied in a month, kilograms;
  - $q$  = Number of different materials added to the coating material;
  - $C_{hij}$  = Organic hazardous air pollutant content of material,  $j$ , added to as-purchased coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms;
  - $M_{ij}$  = Mass of material,  $j$ , added to as-purchased coating material,  $i$ , in a month, kilograms; and
  - $M_{vret}$  = Mass of volatile matter retained in the coated web after curing or drying, or otherwise not emitted to the atmosphere, kilograms. The value of this term will be zero in all cases except where the owner or operator chooses to take into account the volatile matter retained in the coated web or otherwise not emitted to the atmosphere.
4. If demonstrating compliance with paragraph 4 of permit condition 13.5:
    - a. Use Equation 13-6 to calculate the monthly average as-applied organic hazardous air pollutant content on the basis of coating solids applied; and
    - b. Compliance is achieved if the monthly average organic hazardous air pollutant content of all as-applied coating materials are no more than 0.20 kilograms organic hazardous air pollutant per kilogram coating solids;

**Equation 13-6 – Monthly average organic hazardous air pollutant coating solids**

$$H_S = \frac{\sum_{i=1}^p C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} - M_{vret}}{\sum_{i=1}^p C_{Si} M_i + \sum_{j=1}^q C_{Sij} M_{ij}}$$

Where:

- $H_S$  = Monthly average, as-applied, organic hazardous air pollutant to coating solids ratio, kilograms organic hazardous air pollutant per kilograms coating solids applied;

- $p$  = Number of different coating materials applied in a month;
- $C_{hi}$  = Organic hazardous air pollutant content of coating materials,  $i$ , as-purchased, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material,  $i$ , applied in a month, kilograms;
- $q$  = Number of different materials added to the coating material;
- $C_{hij}$  = Organic hazardous air pollutant content of material,  $j$ , added to as-purchased coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms;
- $M_{ij}$  = Mass of material,  $j$ , added to as-purchased coating material,  $i$ , in a month, kilograms;
- $M_{vret}$  = Mass of volatile matter retained in the coated web after curing or drying, or otherwise not emitted to the atmosphere, kilograms. The value of this term will be zero in all cases except where the owner or operator chooses to take into account the volatile matter retained in the coated web or otherwise not emitted to the atmosphere;
- $C_{Si}$  = Coating solids content of coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms; and
- $C_{Sij}$  = Coating solids content of material,  $j$ , added to as-purchased coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms.

### **13.7 Compliance using monthly organic HAP applied**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.3320(c) and 63.3370(a)(3), (a)(5)(iv), (a)(6)(iii), and (d), the owner or operator may demonstrate compliance with the organic hazardous air pollutant limit in paragraph (2) or (3) in permit condition 13.1 by demonstrating that the total monthly organic hazardous air pollutant applied as determined by Equation 13-7 is less than the calculated equivalent allowable organic hazardous air pollutant.

#### ***Equation 13-7 – Calculating total monthly organic hazardous air pollutant applied***

$$H_m = \sum_{i=1}^p C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} - M_{vret}$$

Where:

- $H_m$  = Total monthly organic hazardous air pollutant applied, kilograms;
- $p$  = Number of different coating materials applied in a month;
- $C_{hi}$  = Organic hazardous air pollutant content of coating material,  $i$ , as-purchased, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material,  $i$ , applied in a month, kilograms;
- $q$  = Number of different materials added to the coating material;
- $C_{hij}$  = Organic hazardous air pollutant content of material,  $j$ , added to as-purchased coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms;
- $M_{ij}$  = Mass of material,  $j$ , added to as-purchased coating material,  $i$ , in a month, kilograms; and
- $M_{vret}$  = Mass of volatile matter retained in the coated web after curing or drying, or otherwise not emitted to the atmosphere, kilograms. The value of this term will be zero in all cases except where the owner or operator chooses to take into account the volatile matter otherwise not emitted to the atmosphere.

### **13.8 Determining monthly allowable organic HAP emissions**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3370(l), the owner or operator shall calculate the monthly allowable organic hazardous air pollutant emission limit for demonstrating compliance with permit condition 13.7. The owner or operator shall determine the amount of coating material applied at greater than or equal to 20 mass percent coating solids and the amount of coating material applied at less than 20 mass percent coating solids. The allowable organic hazardous air pollutant limit is then calculated based on coating material applied at greater than or equal to 20 mass percent coating solids if complying with 0.2 kilogram organic hazardous air pollutant per kilogram coating solids or coating material applied at less than 20 mass percent coating solids if complying with 4 mass percent organic hazardous air pollutant as follows:

1. Determine the as-purchased mass of each coating material applied each month;
2. Determine the as-purchased coating solids content of each coating material applied each month;
3. Determine the as-purchased mass fraction of each coating material which was applied at 20 mass percent or greater coating solids content on an as-applied basis;
4. Determine the total mass of each solvent, diluent, thinner, or reducer added to coating materials which were applied at less than 20 mass percent coating solids content on an as-applied basis each month; and
5. Calculate the monthly allowable organic hazardous air pollutant emissions using Equation 13-8.

***Equation 13-8 – Calculate monthly allowable organic hazardous air pollutant emissions***

$$H_a = 0.20 \left[ \sum_{i=1}^p M_i G_i C_{si} \right] + 0.04 \left[ \sum_{i=1}^p M_i (1 - G_i) + \sum_{j=1}^q M_{Lj} \right]$$

Where:

- $H_a$  = Monthly allowable organic hazardous air pollutant emissions, kilograms;
- $p$  = Number of different coating materials applied in a month;
- $M_i$  = Mass of as-purchased coating material,  $i$ , applied in a month, kilograms;
- $G_i$  = Mass fraction of each coating material,  $i$ , which was applied at 20 mass percent or greater coating solids content, on an as-applied basis, kilograms/kilograms;
- $C_{si}$  = Coating solids content of coating material,  $i$ , expressed as a mass fraction, kilograms/kilograms;
- $q$  = Number of different materials added to the coating material; and
- $M_{Lj}$  = Mass of non-coating-solids-containing coating materials which were applied at less than 20 mass percent coating solids content, on an as-applied basis, in a month, kilograms.

### **13.9 Compliance with capture and control device(s)**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.3320(c) and 63.3370(a)(5)(i) and (e)(1), the owner or operator may demonstrate compliance with the overall control efficiency limit in paragraph (1) in permit condition 13.1 by operating a capture and

control device system with an overall organic hazardous air pollutant control efficiency of at least 95 percent on a monthly basis.

### **13.10 Determining compliance with capture and control device**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3370(e)(2) and (n), the owner or operator shall demonstrate compliance with permit condition 13.9 according to the following procedures:

1. Demonstrating compliance through performance tests of capture and control device efficiency and continuous parameter monitoring systems for Unit #4f shall be based on the owner or operator:
  - a. Monitoring the operating parameter in accordance with permit condition 13.13 to ensure control device efficiency;
  - b. For each capture system delivering emissions to Unit #4f, monitor the operating parameter(s) established in accordance with permit condition 13.13; and
  - c. Determine the organic hazardous air pollutant emissions from those web coating lines served by each capture system delivering emission to Unit #4f in accordance with permit condition 13.11;
2. For uncontrolled coating lines, the owner or operator shall determine the organic hazardous air pollutant applied on those web coating lines using Equation 13-7. The organic hazardous air pollutant emitted from an uncontrolled web coating line is equal to the organic hazardous air pollutant applied on that web coating line;
3. Convert the information obtained in paragraph (1) and (2) of this permit condition into units of the selected compliance option using the appropriate calculation procedures:
  - a. Calculate the organic hazardous air pollutant emissions for the month by summing all organic hazardous air pollutant emissions calculated according to paragraph (1) and (2) of this permit condition;
  - b. If demonstrating compliance on the basis of organic hazardous air pollutant emission rate based on coating solids applied or emission of less than the calculated allowable organic hazardous air pollutant, the owner or operator shall determine the coating solids content of each coating material applied during the month following the procedures in permit condition 13.4;
  - c. Calculate the organic hazardous air pollutant emission rate based on coating solids applied for each month using Equation 13-9;

***Equation 13-9 – Organic hazardous air pollutant emission rate based on coating solids applied***

$$L = \frac{H_e}{\sum_{i=1}^p C_{si} M_i + \sum_{j=1}^q C_{sij} M_{ij}}$$

Where:

- L = Mass organic hazardous air pollutant emitted per mass of coating solids applied, kilograms/kilograms;
- H<sub>e</sub> = Total monthly organic hazardous air pollutant emitted, kilograms;
- p = Number of different coating materials applied in a month;

- $C_{si}$  = Coating solids content of coating material, i, expressed as a mass fraction, kilograms/kilograms;
- $M_i$  = Mass of as-purchased coating material, i, applied in a month, kilograms;
- $q$  = Number of different materials added to the coating material;
- $C_{sij}$  = Coating solids content of material, j, added to as-purchased coating material, i, expressed as a mass-fraction, kilograms/kilograms; and
- $M_{ij}$  = Mass of material, j, added to as-purchased coating material, i, in a month, kilograms.

- d. Calculate the organic hazardous air pollutant emission rate based on material applied using Equation 13-10;

***Equation 13-10 – Organic hazardous air pollutant based on materials applied***

$$S = \frac{H_e}{\sum_{i=1}^p M_i + \sum_{j=1}^q M_{ij}}$$

Where:

- $S$  = Mass organic hazardous air pollutant emitted per mass of material applied, kilograms/kilograms;
  - $H_e$  = Total monthly organic hazardous air pollutant emitted, kilograms;
  - $p$  = Number of different coating materials applied in a month;
  - $M_i$  = Mass of as-purchased coating material, i, applied in a month, kilograms;
  - $q$  = Number of different materials added to the coating material; and
  - $M_{ij}$  = Mass of material, j, added to as-purchased coating material, i, in a month, kilograms.
4. Compliance with permit condition 13.1 is demonstrated for the month if all operating parameters required to be monitored under paragraph (1) of this permit condition were maintained at the appropriate; and:
    - a. The total mass of organic hazardous air pollutants emitted based on coating solids applied is no more than 0.20 kilograms organic hazardous air pollutants per kilogram coating solids applied; or
    - b. The total mass of organic hazardous air pollutants emitted based on material applied is no more than 0.04 kilograms organic hazardous air pollutants per kilogram material applied; or
    - c. The total mass of organic hazardous air pollutants emitted during the month is less than the calculated allowable organic hazardous air pollutant as determined using permit condition 13.8; or
    - d. The total mass of organic hazardous air pollutants emitted was not more than five percent of the total mass of organic hazardous air pollutants applied for the month. The total mass of organic hazardous air pollutants applied in the month shall be determined using Equation 13-11.

### **13.11 Organic HAPs from intermittent and never controlled work stations**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3370(k)(1)(i) through (iii), and (v) and (o), the owner or operator shall demonstrate compliance using a regenerative thermal oxidizer by performing the following procedures:

1. Demonstrate initial compliance through performance tests of capture efficiency and control device efficiency and continuing compliance through continuous monitoring of capture system and control device operating parameters as specified below:
  - a. Determine the regenerative thermal oxidizer destruction efficiency;
  - b. Determine the capture system capture efficiency in accordance with permit condition 13.12;
  - c. Whenever a web coating line is operated, continuously monitor the operating parameters established in accordance with permit condition 13.10 to ensure capture and control efficiency;
  - d. If demonstrating compliance on the basis of organic hazardous air pollutant emission rate based on coating solids applied or emission of less than the calculated allowable organic hazardous air pollutant, determine the coating solids content of each coating material applied during the month following the procedure in permit condition 13.4; and
  - e. Determine organic hazardous air pollutant emissions for intermittently controlled and never controlled work stations by:
    - i. Determine the sum of the mass of all coating materials as-applied on intermittently controlled work stations operating in bypass mode and the mass of all coating materials as-applied on never controlled work stations during the month;
    - ii. Determine the sum of the mass of all coating materials as-applied on intermittently controlled work stations operating in a controlled mode and the mass of all coating materials applied on always controlled work stations during the month; and
    - iii. Calculate the organic hazardous air pollutants emitted during the month using Equation 13-11.

#### ***Equation 13-11 – Calculating organic hazardous air pollutant emissions***

$$H_e = \left[ \sum_{i=1}^p M_{ci} C_{ahi} \right] \left[ 1 - \frac{R}{100} \right] + \left[ \sum_{i=1}^p M_{Bi} C_{ahi} \right] - M_{vret}$$

Where:

- $H_e$  = Total monthly organic hazardous air pollutants emitted, kilogram;
- $p$  = Number of different coating materials applied in a month;
- $M_{ci}$  = Sum of the mass of coating material,  $i$ , as-applied on intermittently controlled work stations operating in controlled mode and the mass of coating material,  $i$ , as-applied on always controlled work stations, in a month, kilogram;
- $C_{ahi}$  = Monthly average, as-applied, organic hazardous air pollutant content of coating material,  $i$ , expressed as a mass fraction, kilogram/kilogram;
- $R$  = Overall organic hazardous air pollutant control efficiency, percent;

- $M_{Bi}$  = Sum of the mass of coating material, i, as-applied on intermittently controlled work stations operating in bypass mode and the mass of coating material, i, as-applied on never controlled work stations, in a month, kilogram;
- $C_{ahi}$  = Monthly average, as-applied, organic hazardous air pollutant content of coating material, i, expressed as a mass fraction, kilogram/kilogram; and
- $M_{vret}$  = Mass of volatile matter retained in the coated web after curing or drying, or otherwise not emitted to the atmosphere, kilogram. The value of this term will be zero in all cases except where the owner or operator choose to take into account the volatile matter retained in the coated web or otherwise not emitted to the atmosphere as determined in permit condition 13.16.

### **13.12 Compliance with Unit #4f operating limit**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3321(a), the owner or operator shall meet the following operating limits for the regenerative thermal oxidizer and capture systems associated with Unit #4f:

1. The average combustion temperature of Unit #4f in any 3-hour period shall not fall below the combustion temperature limit established in permit condition 13.19; and
2. The owner or operator shall submit a monitoring plan for the emission capture systems that identifies operating parameters to be monitored in accordance with permit condition 13.13.

The average combustion temperature and operating parameters shall be met at all times once the operating limits have been established during the initial performance test or subsequent performance tests.

### **13.13 Continuous parameter monitoring system**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3350(a)(3) and (4), (b), (e) and (f), the owner or operator shall install, operate, and maintain a continuous parameter monitoring system that meets the following requirements:

1. Install, calibrate, maintain, and operate temperature monitoring equipment on Unit #4f according to the manufacturer's specifications. The calibration of the chart recorder, data logger, or temperature indicator shall be verified every three months or the chart recorder, data logger, or temperature indicator shall be replaced. In addition, the owner or operator shall replace the chart recorder, data logger, or temperature indicator if the equipment cannot be calibrated properly;
2. Install, calibrate, operate, and maintain a continuous temperature recorder. The device shall have an accuracy of  $\pm 1$  percent of the temperature being monitored in degrees Celsius, or  $\pm 1$  degree Celsius, whichever is greater. The thermocouple or temperature sensor shall be installed in the combustion chamber at a location in the combustion zone;
3. Each continuous parameter monitoring system shall complete a minimum of one cycle of operation for each successive 15-minute period. A minimum of four equally spaced successive cycles of continuous parameter monitoring system operation is required for a valid hour of data;



4. Valid hourly data is required from at least 90 percent of the hours during which the process operated;
5. The hourly average of all recorded readings shall be determined in the following manner:
  - a. To calculate a valid hourly value, at least three of four equally spaced data values from the hour from a continuous monitoring system that is not out-of-control; or
  - b. Provided all of the reading recorded in accordance with section (4) of this permit condition clearly demonstrate continuous compliance with the standard that applies, then the hourly average of all the reading is not required.
6. Determine the rolling 3-hour average of all recorded readings for each operating period. To calculate the average for each 3-hour averaging period, the owner or operator must have at least two of three of the hourly averages for that period using only average values that are based on valid data;
7. Record the results of each inspection, calibration, and validation check of the continuous parameter monitoring system;
8. At all time, the monitoring system shall be maintained in proper working order including, but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment;
9. Except for monitoring malfunctions, associated repairs, or required quality assurance or control activities, including calibration checks, or required zero and span adjustment, all monitoring shall occur at all times that the unit is operating. Data recorded during monitoring malfunctions, associated repairs, out-of-control periods, or required quality assurance or control activities shall not be used for purposes of calculating emission concentration and percent reductions. All valid data collected during all other periods shall be used in assessing compliance of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions;
10. Any averaging period for which the owner or operator does not have valid monitoring data and such data are required constitutes a deviation, and the owner or operator shall notify the Secretary in accordance with permit condition 13.23; and
11. A site specific monitoring plan shall be developed and maintained that meets the following requirements for each capture system:
  - a. Identify the operating parameter to be monitored to ensure that the capture efficiency determined during the initial compliance test is maintained;
  - b. Explain why this parameter is appropriate for demonstrating ongoing compliance; and
  - c. Identify the specific monitoring procedures;
  - d. The monitoring plan shall specify the operating parameter value or range of values that demonstrate compliance. The specified operating parameter value or range of values shall represent the condition present when the capture system is being properly operated and maintained;
  - e. All capture system monitoring shall be conducted according to the monitoring plan;
  - f. Any deviation from the operating parameter value or range of values which are monitored according to the monitoring plan will be considered a deviation from the operating limit and shall be reported to the Secretary in accordance with permit condition 13.23; and
  - g. The monitoring plan shall be reviewed and updated on an annual basis.

#### **13.14 Bypassing regenerative thermal oxidizer monitoring**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3350(a)(1) and (c), if the owner or operator operates a web coating line and intermittently controls the web coating line with the regenerative thermal oxidizer associated with Unit #4f, the owner or operator shall monitor bypasses of the regenerative thermal oxidizer using at least one of the following procedures:

1. The owner or operator shall install, calibrate, maintain, and operate according to the manufacturer's specifications a flow control position indicator that provides a record indicating if the exhaust stream from each intermittently controlled coater line was directed to the regenerative thermal oxidizer or was diverted from the regenerative thermal oxidizer. The time and flow control position shall be recorded at least once per hour as well as every time the flow direction is changed. A flow control position indicator shall be installed at the entrance to any bypass line that could divert the exhaust stream away from the regenerative thermal oxidizer to the atmosphere;
2. The owner or operator shall secure any bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve or damper is maintained in the closed position, and the exhaust stream is not diverted through the bypass line;
3. The owner or operator shall ensure that any bypass line valve or damper is in the closed position through continuous monitoring of valve position when the intermittently controlled coater line is in operation. The monitoring system shall be inspected at least once every month to verify that the monitor will indicate valve position; and/or
4. The owner or operator shall use an automatic shutdown system in which the web coating line is stopped when flow is diverted away from the thermal oxidizer to any bypass line when the thermal oxidizer is in operation. The automatic system shall be inspected at least once every month to verify that it will detect diversion of flow and would shut down operations in the event of such a diversion.

The owner or operator shall also monitor the mass of each coating material applied at each web coating line associated with Unit #4f during any such bypass. The owner or operator shall demonstrate that any coating material applied in bypass mode is allowed in accordance with permit condition 13.10 and 13.11.

#### **13.15 Capture efficiency determination**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(a)(2) and (f), the owner or operator shall determine the capture efficiency using the following procedures:

1. The owner or operator may assume that the capture efficiency equals 100 percent if the capture system is a permanent total enclosure. The owner or operator shall confirm that the capture system is a permanent total enclosure by demonstrating that it meets the requirements of 40 CFR Part 51, Appendix M, Method 204, Section 6 and that all exhaust gases from the enclosure are delivered to a control device; or
2. The owner or operator may determine the capture efficiency according to the protocols for testing with temporary total enclosures that are specified in 40 CFR Part 51,

Appendix M, Methods 204 and 204A through F. The owner or operator may exclude never controlled work stations from such capture efficiency determinations; or

3. The owner or operator may use any capture efficiency protocol and test methods that satisfy the criteria of either the Data Quality Objective or the Lower Confidence Limit approach as described in 40 CFR Part 63, Subpart KK, Appendix A. The owner or operator may exclude never controlled work stations from such capture efficiency determinations.

### **13.16 Volatile matter retained in the coated web or otherwise not emitted**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(a)(2) and (g), the owner or operator may choose to take into account the mass of volatile matter retained in the coated web after curing or drying or otherwise not emitted to the atmosphere. If the owner or operator chooses this option, the owner or operator shall develop a testing protocol to determine the mass of volatile matter retained in the coated web or otherwise not emitted to the atmosphere and submit this protocol to EPA and the Secretary for approval. This protocol shall be submitted with the site-specific test plan. If compliance is demonstrated by permit condition 13.5, 13.6, or 13.7, then the test protocol shall determine the mass of organic hazardous air pollutants retained in the coated web or otherwise not emitted to the atmosphere. Otherwise, compliance shall be demonstrated by using the volatile organic matter content as a surrogate for the hazardous air pollutant content of the coatings.

### **13.17 Performance test to establish destruction and removal efficiency**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(e)(1) and (2), when conducting a performance test to establish the destruction and removal efficiency of Unit #4f, the owner or operator shall conduct the following performance test and establish operating limits:

1. The performance test to establish the destruction or removal efficiency of the control device shall be conducted such that control device inlet and outlet testing is conducted simultaneously and the data are reduced in accordance with the following test methods and procedures. The owner or operator shall conduct three test runs and each test run shall last at least 1 hour:
  - a. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses to determine sampling locations;
  - b. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C, 2D, 2F, or 2G shall be used to determine gas volumetric flow rate;
  - c. 40 CFR Part 60, Appendix A, Method 3, 3A, or 3B shall be used for gas analysis to determine dry molecular weight. The owner or operator may also use as an alternative to Method 3B the manual method for measuring the oxygen, carbon dioxide, and carbon monoxide content of exhaust gas in ANSI/ASME PTC 19.10-1981, "Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus],";
  - d. 40 CFR Part 60, Appendix A, Method 4 shall be used to determine stack gas moisture;
  - e. The gas volumetric flow rate, dry molecular weight, and stack gas moisture shall be determined during each test run specified in paragraph (f)(1)(vii) of this permit condition;

- f. 40 CFR Part 60, Appendix A, Method 25 or 25A shall be used to determine total gaseous non-methane organic matter concentration. Use the same test method for both the inlet and outlet measurements which shall be conducted simultaneously. The owner or operator shall submit notice of the intended test method to the Secretary for approval as specified in Chapter 7.0. The owner or operator shall use Method 25A if any of the conditions described below apply to the control device:
  - i. The exhaust gas volatile organic matter concentration of 50 parts per million by volume or less is required to comply with the emission standards in permit condition 13.1; or
  - ii. The volatile organic matter concentration at the inlet to the control system and the required level of control are such that they result in exhaust gas volatile organic matter concentrations of 50 parts per million by volume or less; or
  - iii. Because of the high efficiency of the control device the anticipated volatile organic matter concentration at the control device exhaust is 50 parts per million by volume or less, regardless of inlet concentration.
- g. Except as provided in §63.7(e)(3), each performance test shall consist of three separate runs with each run conducted for at least 1 hour under the conditions that exist when Unit #4f is operating under normal operating conditions. For the purpose of determining volatile organic compound concentrations and mass flow rates, the average of the results of all the runs will apply. Volatile organic matter mass flow rates shall be determined for each run using Equation 13-12;

***Equation 13-12 – Calculating volatile organic matter mass flow rates***

$$M_f = Q_{sd} \times C_c \times 12 \times 0.0416 \times 10^{-6}$$

Where:

- $M_f$  = Total organic volatile matter mass flow rate, kilograms per hour;
  - $Q_{sd}$  = Volumetric flow rate of gases entering or exiting the control device, as determined according to paragraph (1)(b) of this permit condition, dry standard cubic meters per hour;.
  - $C_c$  = Concentration of organic compounds as carbon, parts per million by volume;
  - 12.0 = Molecular weight of carbon; and
  - 0.0416 = Conversion factor for molar volume, kilogram-moles per cubic meter @ 293 Kelvin and 760 millimeters of mercury;
- h. For each run, emission control device destruction or removal efficiency shall be determined using Equation 13-13;

***Equation 13-13 – Calculating control device destruction or removal efficiency***

$$E = \frac{M_{fi} - M_{fo}}{M_{fi}} \times 100$$

Where:

- E = Organic volatile matter control efficiency of the control device, percent.
- $M_{fi}$  = Organic volatile matter mass flow rate at the inlet to the control device, kilograms per hour;

- $M_{fo}$  = Organic volatile matter mass flow rate at the outlet of the control device, kilograms per hour.
  - i. The control device destruction or removal efficiency is determined as the average of the efficiencies determined in the test runs and calculated in Equation 13-13;
- 2. The owner or operator shall record such process information as may be necessary to determine the conditions in existence at the time of the performance test. Operations during periods of startup, shutdown, and malfunction will not constitute representative conditions for the purpose of a performance test.

### **13.18 Notification of performance test**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.7(b) and 63.3400(d), the owner or operator shall submit a Notification of Performance Tests if the owner or operator is required to conduct a performance test of Unit #4f. This notification and the site-specific test plan shall identify the operating parameters to be monitored to ensure that the capture efficiency of the capture system and the control efficiency of the control device determined during the performance test are maintained.

The owner or operator shall notify the Secretary in writing of the owner's or operator's intention to conduct a performance test at least 60 calendar days before the performance test is initially scheduled to begin to allow the Secretary, upon request, to review and approve the site-specific test plan and to have an observer present during the test. In the event the owner or operator is unable to conduct the performance test on the date specified due to unforeseeable circumstances beyond the owner's or operator's control, the owner or operator shall notify the Secretary as soon as practicable and without delay prior to the scheduled performance test date and specify the date when the performance test is rescheduled.

### **13.19 Establish Unit #4f operating limit**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3360(a)(2) and (e)(3), the owner or operator shall establish the operating limits for Unit #4f during a performance test. The owner or operator shall monitor and record the combustion temperature at least once every 15 minutes during each of the test runs. The combustion temperature shall be monitored in the firebox of Unit #4f or immediately downstream of the firebox before any substantial heat exchange occurs. The owner or operator shall use the data collected during the performance test to calculate and record the average combustion temperature maintained during the performance test. The average combustion temperature is the minimum operating limit for Unit #4f.

### **13.20 Unit #4f startup, shutdown, and malfunction plan**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.6(e)(3) and 63.3340, the owner or operator shall develop and implement a written startup, shutdown, and malfunction plan for Unit #4f that meets the following:

1. Procedures for operating and maintaining Unit #4f during periods of startup, shutdown, and malfunctions;
2. A program of corrective action for a malfunctioning process and air pollution control and monitoring equipment used to comply with the relevant standard. The startup, shutdown,

and malfunction plan does not need to address any scenario that would not cause Unit #4f to exceed its emission limit;

3. Ensure that, at all times, the owner or operator operates and maintains Unit #4f and associated monitoring equipment in a manner which satisfies the general duty to minimize emissions; and
4. Ensure that owner or operator is prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants.

The owner or operator may use its standard operating procedures (SOP) manual, an Occupational Safety and Health Administration (OSHA), or other plan, as its startup, shutdown, and malfunction plan provided the alternative plans meet all the requirements of this permit condition.

During periods of startup, shutdown, and malfunction, the owner or operator shall operate and maintain Unit #4f and monitoring equipment in accordance with the procedures specified in the startup, shutdown, and malfunction plan.

The Secretary may at any time request in writing that the owner or operator submit a copy of the startup, shutdown, and malfunction plan or a portion thereof. Upon receipt of such a request, the owner or operator shall promptly submit a copy of the requested plan or a portion thereof to the Secretary either through the mail or by an electronic format.

#### **13.21 Startup, shutdown, and malfunction plan revisions**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.6(e)(3), the owner or operator may periodically revise the startup, shutdown, and malfunction plan as necessary to satisfy the requirements of this chapter or reflect changes in equipment or procedures. The owner or operator may make such revisions to the startup, shutdown, and malfunction plan without prior approval by the Secretary. However, each such revision to a startup, shutdown, and malfunction plan shall be reported in the semiannual report. If the startup, shutdown, and malfunction plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the startup, shutdown, and malfunction plan at the time the owner or operator developed the plan, the owner or operator shall revise the startup, shutdown, and malfunction plan within 45 days after the event to include detailed procedures for operating and maintaining Unit #4f during similar malfunction events and a program of corrective action for similar malfunctions of Unit #4f and monitoring equipment. In the event that the owner or operator makes any revision to the startup, shutdown, and malfunction plan which alters the scope of the activities at the source which are deemed to be a startup, shutdown, or malfunction, or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in a standard established under this part, the revised plan shall not take effect until after the owner or operator has provided a written notice describing the revision to the permitting authority.

The Secretary may require that an owner or operator make changes to the startup, shutdown, and malfunction plan. The Secretary will require appropriate revisions to a startup, shutdown, and malfunction plan for the following reasons:

1. Does not address a startup, shutdown, or malfunction event that has occurred;
2. Fails to provide for the operation of Unit #4f (including associated monitoring equipment) during a startup, shutdown, or malfunction event in a manner consistent with the general duty to minimize emissions;
3. Does not provide adequate procedures for correcting malfunctions as quickly as practicable; or
4. Includes an event that does not meet the definition of startup, shutdown, or malfunction.

If the startup, shutdown, and malfunction plan is revised, the owner or operator shall maintain at the facility each previous (i.e., superseded) version of the startup, shutdown, and malfunction plan. If at any time after adoption of a startup, shutdown, and malfunction plan the owner or operator ceases operation, the owner or operator shall retain a copy of the most recent plan for five years from the date the source ceases operation.

### **13.22 Paper and other web coating monthly records**

In accordance with ARSD 73:36:08:29, as referenced to 40 CFR §§ 63.10(b)(1) and (2) and 63.3410(a), the owner or operator shall maintain the following monthly records for the operations, air pollution control devices, and monitoring equipment associated with Units #4a, #4b, #4c, #4d, #4e, #4f, #17, #18, #20 through #22, #36, and #37:

1. The occurrence and duration of each startup or shutdown when the startup or shutdown causes an exceedance of any applicable emission limit in this chapter;
2. The occurrence and duration of each malfunction of the unit or the applicable air pollution control and monitoring equipment;
3. All required maintenance performed on the air pollution control and monitoring equipment;
4. Actions taken during periods of startup or shutdown when an exceedance of an applicable emission limit occurs and the actions taken are different from the procedures specified in the startup, shutdown, and malfunction plan;
5. Actions taken during periods of malfunction (including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation) when the actions taken are different from the procedures specified in the startup, shutdown, and malfunction plan;
6. All information necessary, including actions taken, to demonstrate conformance with the startup, shutdown, and malfunction plan when all actions taken during periods of startup or shutdown that caused an exceedance and a malfunction are consistent with the procedures specified in such plan. The information needed to demonstrate conformance with the startup, shutdown, and malfunction plan may be recorded using a "checklist," or some other effective form of recordkeeping;
7. Each period during which the continuous temperature monitoring system associated with Unit #4f is malfunctioning or inoperative, including periods where Unit #4f is exceeding its operating limit (out-of-control periods);
8. The information associated with the continuous parameter monitoring and capture system monitoring required in permit condition 13.13;

9. The information associated with bypass monitoring required in permit condition 13.14 and the mass of each coating material applied at each web coating line associated with Unit #4f during any bypass;
10. The organic hazardous air pollutant data for purpose of demonstrating compliance with permit condition 13.3;
11. The volatile matter and coating solids content data for purpose of demonstrating compliance with permit condition 13.4;
12. Overall control efficiency determination using capture efficiency and control device destruction or removal efficiency test results in accordance with permit condition 13.15 and 13.17;
13. Material, organic hazardous air pollutant, volatile matter, and coating solids usage and compliance demonstrations using these data in accordance with permit condition 13.2, 13.6, and 13.7;
14. All results of performance tests and continuous temperature monitoring system performance evaluations;
15. All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
16. All continuous temperature monitoring system calibration checks;
17. All adjustments and maintenance performed on continuous temperature monitoring system; and
18. All documentation supporting initial notifications and notifications of compliance status.

The owner or operator of shall maintain files of all information (including all reports and notifications) required in this chapter recorded in a form suitable and readily available for expeditious inspection and review. The records shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche.

### **13.23 Semiannual compliance report**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.3400(c) and (g), the owner or operator shall submit a semiannual compliance report to the Secretary. The semiannual compliance report shall contain the following information:

1. Company name and address, permit number, reference to this permit condition, and identification of the submittal as a semiannual compliance report;
2. Statement by a responsible official with that official's name, title, and signature certifying the accuracy of the content of the report;
3. Date of report and beginning and ending dates of the reporting period;
4. If there are no deviations from any emission limit or operating limit in this chapter, a statement that there were no deviations from the emission limit or operating limit and no continuous parameter monitoring system was inoperative, inactive, malfunctioning, out-of-control, repaired, or adjusted during the reporting period; and
5. For each deviation from an emission limit or operating limit that apply, the report shall contain the following information:



- a. The total operating time of each unit subject to deviation reporting during the reporting period;
  - b. Information on the number, duration, and cause of deviations (including unknown cause), if applicable, and the corrective action taken;
  - c. If the cause of the deviation occurred during a startup, shutdown or malfunction (including actions taken to correct a malfunction), the owner or operator shall identify if the procedures specified in the startup, shutdown, and malfunction plan were followed; and
  - d. Information on the number, duration, and cause for continuous parameter monitoring system downtime incidents, if applicable, other than downtime associated with zero and span and other calibration checks.
6. The following information related to actions taken by the owner or operator during startups, shutdowns, and malfunctions that occurred during the reporting period:
- a. The number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limit to be exceeded;
  - b. The owner or operator shall state if the actions taken by an owner or operator during a startup, shutdown, or malfunction are consistent with the procedures specified in the startup, shutdown, and malfunction plan; and
  - c. The owner or operator shall identify any instance where any action taken by an owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the startup, shutdown, and malfunction plan, but the source does not exceed any applicable emission limitation in the relevant emission standard.

The semiannual reports shall cover the periods January 1 through June 30 and July 1 through December 31 of each year. The information required from other semiannual reports required in this permit may be combined with this semiannual report and submitted together. The semiannual reports shall be postmarked or delivered no later than January 30 or July 30 of each year. The semiannual reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar half (i.e., January 30<sup>th</sup> and July 30<sup>th</sup>).

#### **13.24 Immediate startup, shutdown, and malfunction reporting**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR §§ 63.10(d)(5)(ii) and 63.3400(g), any time an action taken by an owner or operator during a startup or shutdown that caused an exceedance of an applicable emission limit in this chapter or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures specified in the startup, shutdown, and malfunction plan, the owner or operator shall report the actions taken for that event. The immediate report shall consist of a telephone call (or facsimile (FAX) transmission) to the Secretary within 2 working days after commencing actions inconsistent with the plan, and it shall be followed by a letter, delivered or postmarked within 7 working days after the end of the event, that contains the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy, explaining the circumstances of the event, the reasons for not following the startup, shutdown, and malfunction plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred (or could have occurred in the case of malfunctions), and actions taken to minimize emissions.

### **13.25 Minimizing emissions**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.6(e)(1), the owner or operator shall at all times, including periods of startup, shutdown, and malfunction, operate and maintain any applicable unit, associated air pollution control equipment, and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. During a period of startup, shutdown, or malfunction, this general duty to minimize emissions requires the owner or operator to reduce emissions from the applicable unit to the greatest extent which is consistent with safety and good air pollution control practices. The general duty to minimize emissions during a period of startup, shutdown, or malfunction does not require the owner or operator to achieve emission levels that would be required by the applicable emission limit at other times if this is not consistent with safety and good air pollution control practices, nor does it require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable emission limit have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Secretary which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including a startup, shutdown, and malfunction plan, if required), review of operation and maintenance records, and inspection of the operation.

Malfunctions associated with Unit #4f shall be corrected as soon as practicable after its occurrence. To the extent that an unexpected event arises during a startup, shutdown, or malfunction associated with Unit #4f, the owner or operator shall comply by minimizing emissions during such a startup, shutdown, and malfunction event consistent with safety and good air pollution control practices.

### **13.26 Circumvention not allowed**

In accordance with ARSD 74:36:08:29, as referenced to 40 CFR § 63.4(b), no owner or operator shall build, erect, install, or use any article, machine, equipment, or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard in this chapter. Such concealment includes, but is not limited to the use of diluents to achieve compliance with a relevant standard in this chapter based on the concentration of a pollutant in the effluent discharged to the atmosphere.

## **14.0 Sterilization Facility MACT – Unit #13a and 13b**

### **14.1 Ethylene oxide emission limit for Unit #13a and #13b**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.362(a) and (b), the owner or operator shall reduce ethylene oxide emissions to the atmosphere from Unit #13a and #13b by at least 99 percent per unit during sterilization operation. Sterilization operation means any time when ethylene oxide is removed from the sterilization chamber through the sterilization chamber vent or the chamber exhaust vent. This emission limit does not apply during periods of malfunction.

### **14.2 Initial performance test for Unit #13b**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.363(a) and (b)(1) and (3),

the owner or operator shall conduct an initial performance test on Unit #13b using the procedures listed in permit condition 14.7 to determine compliance with permit condition 14.1. The initial performance test for Unit #13b shall occur on or before April 29, 2019. The operating limit is the recommended minimum oxidation temperature provided by the oxidation unit manufacturer.

#### **14.3 Work practices for Unit #13a and #13b**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.363(b)(4) the owner or operator shall comply with one of the following work practices for Unit #13a and #13b:

1. Once per year after the initial compliance test, conduct a performance test during routine operations with product in the chamber using the procedures outlined in paragraph 2 of permit condition 14.7. If the percent efficiency is less than 99 percent, restore the catalyst as soon as practicable but no later than 180 days after conducting the performance test; or
2. Once per year after the initial compliance test, analyze ethylene oxide concentration data from paragraph 1 of permit condition 14.6 or a continuous emissions monitor system and restore the catalyst as soon as practicable, but no later than 180 days after data analysis; or
3. Every 5 years, beginning 5 years after the initial compliance test, replace the catalyst bed with new catalyst material.

#### **14.4 Submitting performance test reports**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.366(a), the owner or operator shall report the results of a performance test to the Secretary before the close of business on the 60th day following the completion of the performance test or as approved otherwise in writing by the Secretary. The submittal of the performance test report shall satisfy the notification of compliance status report requirement.

#### **14.5 Monitoring requirements**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR §§ 63.363(f) and 63.364(a)(2), the owner or operator shall demonstrate continuous compliance with the operating limit and work practice standard for Unit #13a and #13b, except during periods of startup, shutdown and malfunction. The owner or operator shall monitor the parameters specified in permit condition 14.6. All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from Unit #13a and #13b are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system.

#### **14.6 Demonstrating continuous compliance**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.364(c) and (e), the owner or operator shall demonstrate compliance using one of the following methods:

1. The owner or operator shall measure and record once per hour the ethylene oxide concentration at the outlet to the atmosphere after any control device according to the procedures specified in paragraph (3)(a) of permit condition 14.7. The owner or operator

shall compute and record a 24-hour average daily. The owner or operator will install, calibrate, operate, and maintain a monitor consistent with the requirements of 40 CFR Part 60, Appendix B, performance specification 8 or 9 to measure ethylene oxide. The daily calibration requirements of section 7.2 of performance specification 9 or section 13.1 of performance specification 8 are required only on days when ethylene oxide emissions are vented to the control device; or

2. Continuously monitor and record the oxidation temperature at the outlet to the catalyst bed. The owner or operator shall install, calibrate, operate, and maintain a temperature monitor accurate to within  $\pm 5.6^{\circ}\text{C}$  ( $\pm 10^{\circ}\text{F}$ ) to measure the oxidation temperature. The owner or operator shall verify the accuracy of the temperature monitor twice each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose). During accuracy checking, the probe of the reference device shall be at the same location as that of the temperature monitor being tested. As an alternative, the accuracy temperature monitor may be verified in a calibrated oven (traceable to NIST standards). Monitoring is required only when the oxidation unit is operated. From 15-minute or shorter period temperature values, a data acquisition system for the temperature monitor shall compute and record a daily average oxidation temperature. Strip chart data shall be converted to record a daily average oxidation temperature each day any instantaneous temperature recording falls below the minimum temperature.

#### **14.7 Test measures and procedures**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.365, if a performance test is required, the owner or operator shall comply with the following performance testing procedures:

1. The owner or operator shall comply with the performance testing requirements in 40 CFR § 63.7, according to the applicability in Table 1 of 40 CFR § 63.360;
2. California Air Resources Board (CARB) Method 431 or the following procedures shall be used to determine the efficiency used to comply with permit condition 14.1:
  - a. The first evacuation of the sterilization chamber shall be performed on an empty sterilization chamber, charged with a typical amount of ethylene oxide, for the duration of the first evacuation under normal operating conditions (i.e., sterilization pressure and temperature);
  - i. The amount of ethylene oxide loaded into the sterilizer ( $W_c$ ) shall be determined by either:
    - a) Weigh the ethylene oxide gas cylinder(s) used to charge the sterilizer before and after charging. Record these weights to the nearest 45 grams (0.1 pounds). Multiply the total mass of gas charged by the weight percent ethylene oxide present in the gas;
    - b) Install calibrated rotameters at the sterilizer inlet and measure flow rate and duration of sterilizer charge. Use Equation 14-1 to convert flow rate to weight of ethylene oxide;

**Equation 14-1 – Weight of Ethylene Oxide**

$$W_c = F_v \times t \times \%EO_v \times \left( \frac{MW}{SV} \right)$$

Where:

- $W_c$  = Weight of ethylene oxide charged, grams (pounds);
- $F_v$  = Volumetric flow rate, liters per minute corrected to 20 degrees Celsius and 101.325 kilopascals (standard cubic feet per minute corrected to 68 degrees Fahrenheit and 1 atmosphere of pressure). The flow rate shall be constant during time (t);
- $t$  = time, minutes;
- $\%EO_v$  = Volume fraction ethylene oxide;
- $SV$  = Standard volume, 24.05 liters per mole = 22.414 liters per mole ideal law constant corrected to 20 degrees Celsius and 101.325 kilopascals (385.32 standard cubic feet per moles = 359 standard cubic feet per mole ideal gas law constant corrected to 68 degrees Fahrenheit and 1 atmosphere); and
- $MW$  = molecular weight of ethylene oxide, 44.05 grams per gram-mole (44.05 pounds per pound-mole; or

- c) Calculating the mass based on the conditions of the chamber immediately after it has been charged using Equation 14-2;

**Equation 14-2 – Mass of Ethylene Oxide**

$$W_c = \frac{MW \times \%EO_v \times P \times V}{R \times T}$$

Where:

- $W_c$  = Weight of ethylene oxide charged, grams (pounds);
- $MW$  = molecular weight of ethylene oxide, 44.05 grams per gram-mole (44.05 pounds per pound-mole);
- $\%EO_v$  = Volume fraction ethylene oxide;
- $P$  = Chamber pressure, kilopascals (pounds per square inch absolute);
- $V$  = Chamber volume, liters (cubic foot);
- $R$  = gas constant, 8.313 liters-kilopascals per gram-mole (10.73 pounds per square inch absolute-cubic foot per mole-degrees Rankin); and
- $T$  = temperature, Kelvin (Rankin);

*Note:* If the ethylene oxide concentration is in weight percent, use Equation 14-3 to calculate mole fraction.

**Equation 14-3 – Converting to mole fraction**

$$\%EO_v = \frac{W_{EO}}{W_{EO} + \left( W_x \times \frac{MW}{MW_x} \right)}$$

Where:

- %EO<sub>v</sub> = Volume fraction ethylene oxide;
- W<sub>EO</sub> = Weight percent of ethylene oxide;
- W<sub>x</sub> = Weight percent of compound in the balance of the mixture;
- MW = molecular weight of ethylene oxide, 44.05 grams per gram-mole (44.05 pounds per pound-mole; and
- MW<sub>x</sub> = molecular weight of compound in the balance gas mixture;

- ii. The residual mass of ethylene oxide in the sterilizer shall be determined by recording the chamber temperature, pressure, and volume after the completion of the first evacuation and using Equation 14-4:

***Equation 14-4 – Calculating residual mass***

$$W_r = \frac{MW \times \%EO_v \times P \times V}{R \times T}$$

Where:

- W<sub>r</sub> = weight of ethylene oxide remaining in chamber (after the first evacuation), grams (pounds);
- MW = molecular weight of ethylene oxide, 44.05 grams per gram-mole (44.05 pounds per pound-mole;
- %EO<sub>v</sub> = Volume fraction ethylene oxide;
- P = Chamber pressure, kilopascals (pounds per square inch absolute);
- V = Chamber volume, liters (cubic foot);
- R = gas constant, 8.313 liters-kilopascals per gram-mole (10.73 pounds per square inch absolute-cubic foot per mole-degrees Rankin); and
- T = temperature, Kelvin (Rankin);

- iii. Calculate the total mass of ethylene oxide at the inlet to the control device (W<sub>i</sub>) by subtracting the residual mass (W<sub>r</sub>) from the charged weight (W<sub>c</sub>);
- iv. The mass of ethylene oxide emitted from the control device outlet (W<sub>o</sub>) shall be calculated by continuously monitoring the flow rate and concentration using the following procedure:
- a) Measure the flow rate through the control device exhaust continuously during the first evacuation using the procedure found in 40 CFR Part 60, Appendix A, Test Methods 2, 2A, 2C, or 2D, as appropriate. (Method 2D (using orifice plates or Rootstyle meters) is recommended for measuring flow rates from sterilizer control devices.) Record the flow rate at 1-minute intervals throughout the test cycle, taking the first reading within 15 seconds after time zero. Time zero is defined as the moment when the pressure in the sterilizer is released. Correct the flow to standard conditions (20 degrees Celsius and 101.325 kilopascals (68 degrees Fahrenheit and 1 atmosphere)) and determine the flow rate for the run;
  - b) 40 CFR Part 60, Appendix A, test Method 18 or 25A shall be used to measure the concentration of ethylene oxide;

- 1) Prepare a graph of volumetric flow rate versus time corresponding to the period of the run cycle. Integrate the area under the curve to determine the volume;
- 2) Calculate the mass of ethylene oxide by using Equation 14-5.

***Equation 14-5 – Calculating mass of ethylene oxide***

$$W_o = C \times V \times \frac{MW}{SV} \times \frac{1}{10^6}$$

Where:

- $W_o$  = Mass of ethylene oxide, grams (pounds);
- $C$  = concentration of ethylene oxide, parts per million by volume;
- $V$  = volume of gas exiting the control device corrected to standard conditions, liters (cubic foot);
- $MW$  = molecular weight of ethylene oxide, 44.05 grams per gram-mole (44.05 pounds per pound-mole);
- $SV$  = Standard volume, 24.05 liters per mole = 22.414 liters per mole ideal law constant corrected to 20 degrees Celsius and 101.325 kilopascals (385.32 standard cubic feet per moles = 359 standard cubic feet per mole ideal gas law constant corrected to 68 degrees Fahrenheit and 1 atmosphere); and
- $1/10^6$  = correction factor LEO/106 LTOTAL GAS (ft3EO/106 ft3TOTAL GAS)

- 3) Calculate the efficiency by Equation 14-6;

- v. Determine control device efficiency (% Eff) using Equation 14-6;

***Equation 14-6 – Calculating control device efficiency***

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

Where:

- % Eff = percent efficiency;
- $W_i$  = mass flow rate into the control device; and
- $W_o$  = mass flow rate out of the control device.

- vi. Repeat the procedures in paragraphs (2)(a) (i) through (v) of this permit condition three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device.
3. For determining the ethylene oxide concentration required in permit condition 14.6, follow the procedures in 40 CFR Part 60, Appendix B, Performance Specification 8 or 9. If complying with Performance Specification 8, the owner or operator is exempt from the relative accuracy procedures in sections 2.4 and 3 of Performance Specification 8.

#### **14.8 Recordkeeping requirements for Unit #13a and #13b**

In accordance with ARSD 73:36:08:10, as referenced to 40 CFR § 63.367, the owner or operator shall maintain the following records:

1. The occurrence and duration of each malfunction of Unit #13a and/or #13b operation or the associated catalyst oxidizer and monitoring equipment;
2. All required measurements needed to demonstrate compliance with a relevant standard, including, but not limited to, 15-minute averages of continuous monitoring system data, raw performance testing measurements, and raw performance evaluation measurements, that support data the owner or operator is required to report with the following exceptions:
  - a. If the continuous emissions monitoring system is automated and where the calculated data averages do not exclude periods of continuous emissions monitoring system breakdown or malfunction. An automated continuous emission monitoring system records and reduces the measured data to the form of the pollutant emission standard through the use of a computerized data acquisition system. In lieu of maintaining a file of all continuous emissions monitoring system sub hourly measurements, the owner or operator shall retain the most recent consecutive three averaging periods of sub hourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard;
  - b. If the continuous emissions monitoring system where the measured data is manually reduced to obtain the reportable form of the standard and where the calculated data averages do not exclude periods of continuous emissions monitoring system breakdown or malfunction. In lieu of maintaining a file of all continuous emissions monitoring system sub hourly measurements, the owner or operator shall retain all sub hourly measurements for the most recent reporting period. The sub hourly measurements shall be retained for 120 days from the date of the most recent summary or excess emission report submitted to the Secretary; and
  - c. The Secretary, upon notification, may require the owner or operator to maintain all measurements, if the Secretary determines these records are required to more accurately assess the compliance status of Unit #13a and/or #13b.
3. All results of performance tests and continuous monitoring system performance evaluations;
4. All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
5. All continuous monitoring system calibration checks;
6. All adjustments and maintenance performed on the continuous monitoring system;
7. All documentation supporting initial notifications and performance test reports;
8. All required continuous monitoring system measurements, including monitoring data recorded during unavoidable continuous monitoring system breakdowns and out-of-control periods;
9. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero (low-level) and high-level checks;
10. The specific identification (i.e., the date and time of commencement and completion) of each time period of excess emissions and parameter monitoring exceedances, as defined



in the relevant standard(s), that occurs during periods other than startups, shutdowns, and malfunctions of Unit #13a and/or #13b;

11. The nature and cause of any malfunction (if known);
12. The corrective action taken or preventive measures adopted;
13. The nature of the repairs or adjustments to the continuous monitoring system that was inoperative or out of control;
14. The total process operating time during the reporting period; and
15. All procedures that are part of a quality control program developed and implemented for continuous monitoring system under §63.8(d).

All records required to be maintained by this chapter shall be maintained in such a manner that they can be readily accessed and are suitable for inspection. The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records shall be retained onsite or shall be accessible to an inspector while onsite. The records of the preceding 3 years, where required, may be retained offsite. Records may be maintained in hard copy or computer-readable form including, but not limited to, on paper, microfilm, computer, computer disk, magnetic tape, or microfiche.

#### **14.9 Semiannual report – Continuous monitoring systems**

In accordance with ARSD 74:36:08:10, as referenced to 40 CFR § 63.366(a), if the owner or operator installs a continuous monitoring system, the owner or operator shall submit a semiannual report. The semiannual report shall contain the following:

1. The company name and address of the affected source;
2. Identify as applicable Unit #13a and/or #13b;
3. The beginning and ending dates of the reporting period;
4. A brief description of the process units;
5. The emission and operating parameter limits specified in permit condition 14.1 and 14.2;
6. The monitoring equipment manufacturer(s) and model number(s);
7. The date of the latest continuous monitoring system certification or audit;
8. The total operating time of Unit #13a and/or #13b during the reporting period;
9. An emission data summary (or similar summary if the owner or operator monitors control system parameters), including the total duration of excess emissions during the reporting period (recorded in hours), the total duration of excess emissions expressed as a percent of the total operating time per unit during that reporting period, and a breakdown of the total duration of excess emissions during the reporting period into those that are due to startup/shutdown, control equipment problems, process problems, other known causes, and other unknown causes;
10. A continuous monitoring system performance summary (or similar summary if the owner or operator monitors control system parameters), including the total continuous monitoring system downtime during the reporting period (recorded in hours), the total duration of continuous monitoring system downtime expressed as a percent of the total operating time per unit during that reporting period, and a breakdown of the total continuous monitoring system downtime during the reporting period into periods that are due to monitoring equipment malfunctions, non-monitoring equipment malfunctions,

quality assurance/quality control calibrations, other known causes, and other unknown causes;

11. A description of any changes in continuous monitoring system, processes, or controls since the last reporting period;
12. When no deviations occurred or monitoring equipment has not been inoperative, repaired, or adjusted during the reporting period, such information shall be stated in the report;
13. The name, title, and signature of the responsible official who is certifying the accuracy of the report; and
14. The date of the report.

The semiannual reports shall cover the periods January 1 through June 30 and July 1 through December 31 of each year. The information required from other semiannual reports required in this permit may be combined with this semiannual report and submitted together. The semiannual reports shall be postmarked or delivered no later than January 30 or July 30 of each year. The semiannual reports shall be postmarked or delivered no later than 30<sup>th</sup> day following the end of each calendar half (i.e., January 30<sup>th</sup> and July 30<sup>th</sup>).

## **15.0 Emergency Engine NSPS Requirements – Unit #25**

### **15.1 Unit #25 emission limit**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4205(b) and 60.4206, the owner or operator shall operate and maintain Unit #25 in a manner that achieves the emission limits in Table 15-1 over the entire life of Unit #25.

*Table 15-1 – Emission Limits for Emergency Engines*

Unit	Nonmethane Hydrocarbon + Nitrogen Oxide	Carbon Monoxide	Total Suspended Particulate Matter
#25	6.4 grams/kilowatt-hour	3.5 grams/kilowatt-hour	0.20 grams/kilowatt-hour

### **15.2 Fuel requirements for Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4207(b), the owner or operator shall only combust diesel fuel in Unit #25 that meets the following per gallon standards:

1. Maximum sulfur content of 15 parts per million; and
2. Minimum cetane index of 40; or
3. Maximum aromatic content of 35 volume percent.

The owner or operator may use any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, until depleted.

### **15.3 Operating requirements for Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(a), the owner or operator shall comply with the following, except as specified in permit condition 15.6:

1. Operate and maintain the engine according to the manufacturer's emission-related written instructions;
2. Change only those emission-related settings permitted by the manufacturer; and
3. Meet the applicable requirements in 40 CFR Part 89, 94, and/or 1068.

#### **15.4 Compliance with Unit #25 emission limits**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(c), the owner or operator shall demonstrate compliance with the emission limits in permit condition 15.1 by purchasing an engine certified to meet the emission limits in permit condition 15.1 and install and configure the engine according to the manufacturer's emission-related specifications, except as permitted in permit condition 15.6.

#### **15.5 Annual operation of Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(f), the owner or operator shall operate Unit #25 as follows:

1. There is no time limit on the use of Unit #25 in emergency situations;
2. The owner or operator may operate Unit #25 for any combination of the following purposes for a maximum of 100 hours per calendar year:
  - a. Unit #25 may be operated for maintenance checks and readiness testing, provided the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Secretary for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating federal, state, or local standards require maintenance and testing of the emergency engine beyond 100 hours per calendar year;
  - b. Unit #25 may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies, or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3; and
  - c. Emergency engines may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency;
3. Unit #25 may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year provided in paragraph (2) of this permit condition. The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for the owner or operator to an electric grid or otherwise supply power as part of a financial arrangement with another entity, except if all of the following are met:
  - a. Unit #25 is dispatched by the local balancing authority or local transmission and distribution system operator;

- b. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region;
- c. The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines;
- d. The power is provided only to the owner or operator itself or to support the local transmission and distribution system; and
- e. The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the owner or operator.

### **15.6 Alternative requirements for Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(g), if the owner or operator does not install, configure, operate, and maintain Unit #25 according to the manufacturer's emission-related written instructions or changes the emission-related settings in a way that is not permitted by the manufacturer, the owner or operator shall demonstrate compliance as follows:

- 1. Maintain a maintenance plan and records of conducted maintenance;
- 2. To the extent practicable, maintain and operate Unit #25 in a manner consistent with good air pollution control practice for minimizing emissions;
- 3. Conduct an initial performance test to demonstrate compliance with the emission limits in Table 15-1 within 1 year of initial startup or within 1 year of such action; and
- 4. The owner or operator shall conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable limits in Table 15-1.

### **15.7 Performance test requirements for Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4212(a) and (c), if the owner or operator conducts a performance test to demonstrate compliance with Table 15-1, the following procedures shall be followed:

- 1. The performance test shall be conducted according to the in-use testing procedures in 40 CFR Part 1039, Subpart F for emergency engines with a displacement of less than 10 liters per cylinder and according to 40 CFR Part 1042, Subpart F, for emergency engines with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder; and
- 2. Exhaust emissions from Unit #25 shall not exceed the "NTE" numerical requirements, rounded to the same number of decimal places as the applicable emission limit in Table 15-1 and determined by Equation 15-1.

***Equation 15-1 – NTE formula***

$$NTE = 1.25 \times STD$$

Where:

- NTE = Numerical requirement for each pollutant identified in Table 15-1; and
- STD = Emission limit for each pollutant identified in Table 15-1

### **15.8 Notification of test – Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.8(d), the owner or operator shall notify the Secretary at least 30 days prior to the start of a performance test to afford the Secretary the opportunity to have an observer present. If there is a delay in conducting the scheduled performance test, the owner or operator shall notify the Secretary as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Secretary by mutual agreement.

### **15.9 Non-resettable hour meter – Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4209(a) and ARSD 74:36:05:16.01(9), the owner or operator shall install, maintain, and operate a non-resettable hour meter on Unit #25 prior to initial startup.

### **15.10 Annual reporting for Unit #25**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4214(d), if the owner or operator operates Unit #25 or Unit #25 is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in subparagraph (2)(b) and (c) in permit condition 15.5 or that operates for the purposes specified in paragraph (3) of permit condition 15.5, the owner or operator shall submit an annual report. The annual report shall contain the following:

1. Company name and address where the engine is located;
2. Date of the report and beginning and ending dates of the reporting period;
3. Engine site rating and model year;
4. Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place;
5. Hours operated for the purposes specified in subparagraph (2)(b) and (c) in permit condition 15.5, including the date, start time, and end time;
6. Number of hours the engine is contractually obligated to be available for the purposes specified in subparagraph (2)(b) and (c) in permit condition 15.5, if applicable; and
7. Hours spent for operation for the purposes specified in paragraph (3) of permit condition 15.5, including the date, start time, and end time. The report shall also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

The annual report for each calendar year shall be submitted no later than March 31 of the following calendar year. The annual report shall be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form specific to this subpart is not available in CEDRI at the time the report is due, the written report shall be submitted to the Secretary.

## **16.0 Nonemergency Engine NSPS Requirements – Unit #31**

### **16.1 Unit #31 emission limits**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4204(b) and 60.4206, the owner or operator shall operate and maintain Unit #31 in a manner that achieves the emission limits in Table 16-1 over the entire life of Unit #31.

*Table 16-1 – Emission Limits for Unit #31 (grams per kilowatt-hour)*

Unit	Nonmethane Hydrocarbon + Nitrogen Oxide	Carbon Monoxide	Total Suspended Particulate Matter
#31	4.0	3.5	0.20

### **16.2 Fuel requirements for Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4207(b), the owner or operator shall only combust diesel fuel in Unit #31 that meets the following per gallon standards:

1. Maximum sulfur content of 15 parts per million; and
2. Minimum cetane index of 40; or
3. Maximum aromatic content of 35 volume percent.

The owner or operator may use until depleted, any existing diesel fuel purchased or otherwise obtained prior to October 1, 2010.

### **16.3 Compliance with Unit #31 emission limits**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(c), the owner or operator shall demonstrate compliance with the emission limits in permit condition 16.1 by the following methods, except as specified in permit condition 16.5:

1. Purchase a nonemergency engine certified to the emission standards in permit condition 16.1; and
2. Install and configure the nonemergency engine according to the manufacturer's emission-related specifications.

### **16.4 Operating requirements for Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(a), the owner or operator shall comply with the following, except as specified in permit condition 16.5:

1. Operate and maintain Unit #31 according to the manufacturer's emission-related written instructions;
2. Change only those emission-related settings that are permitted by the manufacturer; and
3. Meet the applicable requirements in 40 CFR Part 89, 94, and/or 1068.

### **16.5 Alternative requirements for Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(g)(2), if the owner or operator does not install, configure, operate, and maintain Unit #31 according to the manufacturer's emission-related written instructions or changes the emission-related settings in a

way that is not permitted by the manufacturer, the owner or operator shall demonstrate compliance as follows:

1. Maintain a maintenance plan and records of conducted maintenance;
2. To the extent practicable, maintain and operate Unit #31 in a manner consistent with good air pollution control practice for minimizing emissions; and
3. Conduct an initial performance test to demonstrate compliance with the emission limits in permit condition 16.1 within 1 year of startup, within 1 year after the nonemergency engine is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after the owner or operator changes emission-related settings in a way that is not permitted by the manufacturer.

#### **16.6 Performance test requirements for Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4212(a) and (c), if the owner or operator conducts a performance test to demonstrate compliance with permit condition 16.1, the following procedures shall be followed, except as provided in permit condition 16.7:

1. The performance test shall be conducted according to the in-use testing procedures in 40 CFR Part 1039, Subpart F; and
2. Exhaust emissions from the nonemergency engine shall not exceed the not-to-exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable emission limit in permit condition 16.1 and determined by Equation 16-1.

#### ***Equation 16-1 – NTE formula***

$$NTE = 1.25 \times STD$$

Where:

- NTE = Not-to-exceed requirement for each pollutant; and
- STD = Emission limit for each pollutant identified in Table 16-1

#### **16.7 Alternative performance test requirements for Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4212(c) and 60.4213, the owner or operator may use the following performance test procedures to demonstrate compliance with permit condition 16.1:

1. The performance test shall be conducted according to the requirements in 40 CFR § 60.8 and under the specific conditions in Table 7 of 40 CFR Part 60, Subpart III. The test shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load;
2. The owner or operator shall not conduct the performance test during periods of startup, shutdown, or malfunction;
3. The owner or operator shall conduct three separate test runs for each performance test and each test run shall last at least 1 hour; and
4. To determine compliance with the particulate matter mass per unit output emission limit, convert the concentration of particulate matter in the nonemergency engine exhaust using Equation 16-2.

**Equation 16-2 – Particulate matter conversion**

$$ER = \frac{C_{adj} \times Q \times T}{KW - hour}$$

Where:

- ER = Emission rate, in grams per KW-hour;
- $C_{adj}$  = Calculated particulate matter concentration, in grams per standard cubic meter;
- Q = Stack gas volumetric flow rate, in standard cubic meter per hour;
- T = Time of test run, in hours; and
- KW-hour = Energy output of engine, in kilowatts.

**16.8 Notification of test – Unit #31**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.8(d), the owner or operator shall notify the Secretary at least 30 days prior to the start of a performance test to afford the Secretary the opportunity to have an observer present. If there is a delay in conducting the scheduled performance test, the owner or operator shall notify the Secretary as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Secretary by mutual agreement.

**16.9 Unit #31 equipped with a diesel particulate filter**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4209(b), if the owner or operator equips Unit #31 with a diesel particulate filter to comply with the emission limits in Table 16-1, the diesel particulate filter shall be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

**16.10 Diesel particulate filter records**

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4214(c), if the owner or operator equips Unit #31 with a diesel particulate filter to comply with the emission limits in Table 16-1, the owner or operator shall maintain records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high pressure limit of Unit #31 is approached.

**17.0 MACT Requirements – Unit #34**

**17.1 Date to comply – Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6595(a)(1), the owner or operator of Unit #34 shall comply with the applicable requirements specified in this chapter on and after October 19, 2013.

**17.2 Maintenance requirements for Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6602, the owner or operator shall:

1. Change oil and oil filter every 500 hours of operation or annually, whichever comes first;



2. Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
3. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

If Unit #34 is operating during an emergency and it is not possible to shut down Unit #34 in order to perform the management practice requirements on the schedule or if performing the management practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the management practice can be delayed until Unit #34 is over or the unacceptable risk under federal, state, or local law has abated. The management practice should be performed as soon as practicable after Unit #34 has ended or the unacceptable risk under federal, state, or local law has abated. The owner or operator shall report any failure to perform the management practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable.

The owner or operator has the option of utilizing the oil analysis program described in permit condition 17.7 in order to extend the specified oil change requirement. The owner or operator may also petition the Administrator of EPA and the Secretary pursuant to the requirements in 40 CFR § 63.6(g) for alternative work practices.

### **17.3 Minimizing emissions from Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6605, the owner or operator shall be in compliance with the requirements in this chapter at all times. The owner or operator shall at all times operate and maintain Unit #34, including associated monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the owner or operator to make any further efforts to reduce emissions if the requirements in this chapter have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on available information which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of Unit #34.

### **17.4 Operate Unit #34 according to manufacturer's instructions**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR §§ 63.6625(e) and 63.6640(a), the owner or operator shall operate and maintain Unit #34 according to the manufacturer's emission-related written instructions or develop a maintenance plan which provides to the extent practicable for the maintenance and operation of Unit #34 in a manner consistent with good air pollution control practice for minimizing emissions.

### **17.5 Installation and operation of a non-resettable hour meter on Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR §§ 63.6625(f) and 63.6635(a) and (b), the owner or operator shall install, operate, and maintain a non-resettable hour meter on Unit #34. Except for a non-resettable hour meter malfunction and associated repairs, the non-resettable hour meter shall monitor the operation of Unit #34 continuously at all times the engine is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable

failure of the non-resettable hour meter. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

#### **17.6 Minimizing Unit #34's startup time**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6625(h), the owner or operator shall minimize Unit #34's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

#### **17.7 Alternative maintenance schedule for Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6625(j), the owner or operator may utilize an oil analysis program in order to extend the specified oil change requirement in permit condition 17.2. The oil analysis shall be performed at the same frequency specified for changing the oil in permit condition 17.2. The analysis program shall at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows:

1. Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide per gram from Total Acid Number of the oil when new;
2. Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or
3. Percent water content (by volume) is greater than 0.5.

If all of these condemning limits are not exceeded, the owner or operator is not required to change the oil. If any of the limits are exceeded, the owner or operator shall change the oil within 2 business days of receiving the results of the analysis. If Unit #34 is not in operation when the results of the analysis are received, the owner or operator shall change the oil within 2 business days or before commencing operation, whichever is later. The owner or operator shall keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for Unit #34. The analysis program shall be part of the maintenance plan for Unit #34.

#### **17.8 Operation of Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6640(f), the owner or operator shall operate Unit #34 according to the following:

1. There is no time limit on the use of Unit #34 during emergency situations;
2. The owner or operator may operate Unit #34 for any combination of the following purposes for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (3) of this permit condition counts as part of the 100 hours per calendar year allowed by this paragraph:
  - a. Unit #34 may be operated for maintenance checks and readiness testing, provided the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Secretary for approval of additional hours to be

- used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating federal, state, or local standards require maintenance and testing of Unit #34 beyond 100 hours per calendar year;
- b. Unit #34 may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3; and
  - c. Unit #34 may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency; and
3. Unit #34 may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours per year in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (2) of this permit condition. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for the owner or operator to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

#### **17.9 Recordkeeping for Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR §§ 63.6655 and 63.6660, the owner or operator shall maintain the following records:

1. A copy of each annual report (if applicable);
2. Records of all required maintenance performed on Unit #34 and the non-resettable hour meter;
3. Records of the hours of operation of Unit #34 that is recorded through the non-resettable hour meter. The owner or operator shall document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. The owner or operator shall keep records of the notification of any emergency situation and the date, start time, and end time of engine operation for these purposes; and
4. Records of how the owner or operator complied with operating Unit #34 according to the manufacturer's emission-related instruction or the owner or operator's maintenance plan required in permit condition 17.4.

All records shall be maintained in a form suitable and readily available for expeditious review for 5 years following the date of each occurrence, measurement, maintenance, report or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site.

#### **17.10 Annual report for Unit #34**

In accordance with ARSD 74:36:08:40, as referenced to 40 CFR § 63.6650(h), if Unit #34 is operated for more than 15 hours or more per calendar year for the purposes specified in subparagraph (2)(b) and (c) of permit condition 17.8, the owner or operator operates shall submit an annual report that contains the following:

1. Company name and address where Unit #34 is located;
2. Date of the report and beginning and ending dates of the reporting period;
3. Unit #'s site rating and model year;
4. Latitude and longitude of Unit #34 in decimal degrees reported to the fifth decimal place; and
5. Hours operated for the purposes specified in paragraph (2)(b) and (c) of permit condition 17.8, including the date, start time, and end time for Unit #34.

The annual report for each calendar year in which a report is required shall be submitted no later than March 31 of the following calendar year.

If available, the annual report shall be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) at the following website: <http://www.epa.gov/cdx>. However, if the reporting form specific to this subpart or the database is not available at the time the report is due or the owner or operator does not have access to the database, the written report shall be submitted to the Secretary.

#### **17.11 Circumvention not allowed – Unit #34**

In accordance with ARSD 74:36:08:03, as referenced to 40 CFR § 63.4(b), no owner or operator shall build, erect, install, or use any article, machine, equipment, or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard. Such concealment includes, but is not limited to the use of diluents to achieve compliance with a relevant standard based on the concentration of a pollutant in the effluent discharged to the atmosphere.

### **18.0 Industrial Process Cooling Tower Requirements – Unit #24**

#### **18.1 Industrial process cooling tower water treatment restriction**

In accordance with ARSD 74:36:08:11, as referenced to 40 CFR §§ 63.402 and 63.404(b), no owner or operator shall use chromium based water treatment chemicals in the three industrial process cooling towers associated with Unit #24. A cooling water sample residual hexavalent chromium concentration in excess of 0.5 parts per million by weight shall be considered a violation.